THE LANCET.

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The Oliver-Sharpey Lectures
ON
THE CEREBRO-SPINAL FLUID.

Delivered before the Royal College of Physicians of London on April 22nd and 29th, 1910,

BY F. W. MOTT, M.D. LOND., F.R.C.P. LOND., F.R.S.,

PATHOLOGIST TO THE LONDON COUNTY ASYLUMS; PHYSICIAN TO CHARING CROSS HOSPITAL; AND FULLERIAN PROFESSOR OF PHYSIOLOGY AT THE ROYAL INSTITUTION.

LECTURE I.

Delivered on April 22nd.

THE PHYSIOLOGY OF THE CEREBRO-SPINAL FLUID.

MR. PRESIDENT,—Allow me to thank you and the Fellows of the College for the great honour you have conferred upon me in asking me to give these lectures, which have been delivered in past years by distinguished English physiologists upon subjects having an important bearing upon medical science.

In the selection of a subject for these lectures I felt how desirable it was to follow in the footsteps of my distinguished predecessors in choosing a subject upon which I had spent research and one which at the same time would be of general interest to our profession. I therefore selected the subject of the cerebro-spinal fluid, the physiology of which is barely mentioned in the text-books of physiology, yet as events have shown during the past ten years the investigation of the cerebro-spinal fluid has proved of the greatest value in the differential diagnosis of diseases of the nervous system. I may mention that in the *Revue Neurologique* for the last ten years there are abstracts of 187 papers. I shall deal with the subject under two headings: (1) the physiology, and (2) the pathology of the cerebro-spinal fluid.

A consideration of the physiology of the cerebro-spinal fluid will naturally lead to an inquiry as to its physical and chemical properties, its source, its destination, and its functions. Before, however, proceeding to discuss these subjects in detail I must devote a little time to a brief historical introduction.

HISTORICAL REMARKS.

In 1769 Cotugnuo affirmed the presence in human bodies of a limpid and transparent fluid, like spring-water, that bathed the nervous centres. Contugnuo also found this fluid in fish and turtles, but his researches failed in the dog, why one does not know. A good but short description was made in 1766 by Haller in his researches upon the physiology of the human body. But Majendie first made a complete study of the nature of the pressure, of the movements, and of the rôle of the cerebro-spinal fluid (1825). He thus describes the existence of the fluid:—

> Entre la pie-mère et l'arachnoide se trouve un liquide que je propose d'appeler cérébro-spinale; il existe chez l'homme et chez tous mammifères. Il sert à combler le vide qui existerait entre le cerveau et le crâne osseux; il se régénère avec rapidité, peut circuler à travers les ventricules cérébraux et les espaces sous-arachnoidiens du cerveau et de la moelle. Au moment de l'expiration le cerveau se gonfle; le liquide cérébro-spinale passe du crâne dans le canal vértébral. Quand on augmente la pression du liquide, on produit des phénomènes de paralysie et, d'autre part, quand par une ouverture on provoque l'issu de ce liquide, le cerveau et la moelle n'étant plus protégés, il survient une déblilité et une faiblesse générale de l'animal.

In 1858 Claude Bernard showed a notable quantity of a substance which reduced Fehling's solution. He affirmed that this reducing substance was glucose.

In 1891 Quincke introduced lumbar puncture as a means of treatment for intracranial pressure; it was tried in meningitis and general paralysis but with no beneficial therapeutical results. The simple and safe nature of the operation, however, led to a number of investigations relating to the cytology of the fluid in pathological conditions by French scientists—viz., Widal, Sicard, Ravaut, Abadie; and the successful results obtained in the diagnosis of the various forms of meningitis led to its universal adoption as a valuable means of clinical diagnosis; moreover, it was found that anæsthesia of the lower extremities could be obtained by injection of cocaine, stovaine, &c., into the spinal subarachnoid space by lumbar puncture; this added a new and surgical interest to the cerebro-spinal fluid.

The discovery by Castellani of the *Trypanosoma gambiense* in the cerebro-spinal fluid of cases of sleeping sickness led to lumbar puncture and examination of the cerebro-spinal fluid for trypanosomes becoming a recognised mode of diagnosis of sleeping sickness. But perhaps the greatest interest has been aroused by the application to the cerebro-spinal fluid of the Wassermann-Neisser serum reaction for syphilis by Plaut and others, with the most satisfactory results from a diagnostic point of view of general paralysis of the insane and, to a less degree, of tabes dorsalis. With this brief introduction to my subject I will pass on to discuss in detail the physiology of the fluid, and I will commence with

THE PHYSICAL AND CHEMICAL PROPERTIES.

The cerebro-spinal fluid is a fluid *sui generis*, for its physical and chemical properties are different from those of any other fluid in the organism; it approaches in its composition most nearly the sweat and the tears. The normal fluid is clear, like water. The specific gravity is 1·006 to 1·008. The cryoscopic point of the fluid is from –0·51° to –0·56° C.—that is to say, the temperature of congelation is very near that of blood (–0·56°C.). It is, practically speaking, devoid of all corpuscular elements and it contains only traces of protein matter, becoming only very slightly turbid on heating. It is alkaline in reaction, the alkalinity being only one-half that of the blood (Cavazzani). Calculated in percentages of sodium hydrate it varies slightly in different animals, and in man in different pathological conditions, but it will be observed from the subjoined figures that the variation is within very narrow limits. On an average it corresponds to 0·1 per cent. sodium hydrate.

Alkalinity of Cerebro-spinal Fluid.

		Per cent.	
Male.	Dementia (general paralysis?) ...	0·1076	calculated as NaOH.
,,	,, (general paralysis?) ...	0·1066	,, ,,
,,	General paralysis	0·1104	,, ,,
,,	,, ,, ...	0·1168	,, ,,
,,	,, ,, ...	0·1249	,, ,,
,,	,, ,, ...	0·1132	,, ,,
,,	Delusional insanity	0·1120	,, ,,

(Fluids obtained by lumbar puncture during life, all about noon.)

There is no correspondence between the alkalinity and the rate of flow of the cerebro-spinal fluid; but inasmuch as an acid substance is probably formed as a result of activity of the nervous centres it is possible that after normal sleep the alkalinity may be slightly greater than at the end of a day's work. Although nature generally provides some automatic mechanism whereby any excess of products of metabolism are either removed or neutralised by corresponding activity of secretory processes, in this case an increased cerebro-spinal fluid may be expected to flow if my premisses regarding its mode of origin and functions are correct.

Various analyses show that the principal constituent is sodium chloride, but it also contains traces of carbonates, bicarbonates, phosphates, urea, and dextrose. It is probable that the phosphates, bicarbonates, and carbonates contain relatively more potassium than the salts of the blood, for Geohegan has shown that the ash of the brain in contradistinction to the ashes of all other tissues contained from 20 to 30 per cent. of potassium against 15 per cent. sodium salts.

I have already mentioned that Claude Bernard proved the existence of sugar in the fluid, but examination of fluid obtained from meningoceles led Halliburton to the conclusion that the reducing substance was not sugar but pyrocatechin. He has, however, abandoned that idea and, in my judgment, it would be well if it were no longer mentioned in text-books, as a very able teacher of physiology expressed surprise when I said that glucose was always present in the cerebro-spinal fluid withdrawn during life; this teacher still thought the reducing substance was pyrocatechin. Since I hope to demonstrate the fact that glucose in the cerebro-spinal fluid is very possibly of great importance in the functions of the central nervous system, I wish to emphasise the fact that Professor Halliburton himself has adopted the view that glucose is the reducing substance and is always present in the cerebro-spinal fluid in normal conditions.

Cavazzani describes the presence of glucose in all cerebro-spinal fluids; he asserts that in human cerebro-spinal fluid a diastatic ferment

is present but in smaller quantity than in the lymph. I may mention that we have incubated six specimens of sterile cerebro-spinal fluid for two days without the reducing action being materially affected. Sterile cerebro-spinal fluid has been kept for weeks at the room temperature without the reducing action disappearing. Cavazzani drew off 205 c.c. of cerebro-spinal fluid from a hydrocephalic child; this had a specific gravity of 1·003, and contained 0·98 urea and 0·184 glucose-reducing substance. In another case the specific gravity was 1·006; it contained 0·44 urea and 0·185 reducing substance, with 6·479 chloride of sodium per 1000. Cavazzani was able to confirm in these cases his previous results that the alkalinity of the fluid is greater in the morning than in the evening.

Results of examination of the cerebro-spinal fluid in reference to the quantity of sugar in various conditions.—Mr. Sydney Mann has made for me quantitative analyses of the sugar (by the Fehling gravimetric method) in the cerebro-spinal fluid withdrawn by lumbar puncture during life. The amount of glucose varies from 1·2 to 2·5 per 1000; it will be observed that in dementia præcox the quantity is invariably lower than in any other condition.

Reducing Substance in Cerebro-spinal Fluid.

		Per cent.	
Male.	Old hemiplegia syphilitica	0·212 calculated in terms of glucose.	
,,	General paralysis	0·186	,, ,,
,,	Neurasthenia	0·171	,, ,,
Female.	Dementia præcox	0·147	,, ,,
,,	,, ,, ...	0·146	,, ,,
,,	,, ,, ...	0·133	,, ,,
,,	,, ,, ...	0·127	,, ,,
,,	,, ,, ...	0·126	,, ,,

(Fluids obtained by lumbar puncture during life.)

That this substance which reduces copper salts is glucose is proved by the facts that it gives with phenylhydrazin the crystals of osazone which melt at from 205° to 206°; it is dextro-rotatory, and by the yeast fermentation test it yields carbon dioxide. We shall consider later its origin in the fluid and its functions.

The gases of the cerebro-spinal fluid.—As far as I have been able to ascertain there is no account of observations on the gases of the cerebro-spinal fluid. I have been long impressed with the importance of investigating this subject. Dr. John Haldane advised me to use Krogh's micro-tonometer for this purpose; the principle underlying the apparatus, simply stated, is the relative increase or decrease in size of a bubble of air after it has been freely exposed to the fluid, the gas tensions of which in relation to the component gases of the air we desire to ascertain. We found that the bubble after exposure to fluid which had been drawn off during life in such a way that it did not come into contact with the air, did not diminish in size; it showed rather a tendency to increase at atmospheric pressure, demonstrating that gas had escaped from the fluid to the bubble of air, and this gas was found to be carbon dioxide.

Before continuing these tension experiments it was deemed advisable to analyse the gases present in the cerebro-spinal fluid, and, with the assistance of Mr. Mann, I have been able to do this by employing a very convenient form of mercury pump invented by Professor T. G. Brodie and Dr. Winifred Cullis for determining the percentages of gases in salt solutions. The preliminary results that we have obtained are shown in the accompanying table:—

Analysis of Gases of Cerebro-spinal Fluid: Preliminary Results.

1. Gases obtained by boiling *in vacuo*.

	CO_2.	O_2.	N_2.	
	Per cent.	Per cent.	Per cent.	
1. Dementia præcox ...	8·488 ...	0·356 ...	2·25	by volume.
2. General paralysis... ...	11·067 ...	0·237 ...	1·42	,,
3. ,, ,, ...	11·89 ...	0·157 ...	1·02	,,
4. ,, ,, ...	9·18 ...	0·316 ...	1·97	,,
5. ,, ,, ...	11·19 ...	0·079 ...	0·99	,,

2. Carbon dioxide obtained by boiling *in vacuo* with dilute acid.

	Per cent.	
1. Dementia præcox...	53·21	by volume.
2. Dementia, general paralysis?...	54·90	,,
3. General paralysis...	56·38	,,
4. ,, ,, ...	61·13	,,
5. ,, ,, ...	56·19	,,
6. ,, ,, ...	54·41	,,
7. ,, ,, ...	54·8	,,
8. ,, ,, ...	54·41	,,
9. Dementia, general paralysis?...	54·73	,,
10. ,, ,, ,, ...	58·36	,,

It will be observed that varying small amounts of oxygen and nitrogen are obtained, but the amount of carbon dioxide which can be obtained by boiling the fluid *in vacuo*, on an average, is 10 per cent. by volume; this 10 per cent., I may remark, is obtained by five or six successive operations of boiling *in vacuo*, so that it may be presumed this 10 per cent. by volume of carbon dioxide is in loose dissociable combination. If, however, we take 1 c.c. of the fluid and treat with a weak acid in the same way, we then obtain about 50 per cent. by volume of carbon dioxide. Comparing these results with the gases obtainable from lymph or serum we find that:—

	Cerebro-spinal fluid yield. Per cent.	Lymph and serum yield. Per cent.
By vacuum and heating	10	46 by volume.
By acid and heating *in vacuo* ...	50	50 ,,
Difference representing CO_2 in stable combination	40	4 ,,

It would therefore appear that the carbon dioxide is in a more stable combination in the cerebro-spinal fluid than in the blood. The oxygen and nitrogen in the fluid in all probability did not come from the atmosphere, for the fluid was drawn off into tubes filled with mercury.

As I observed previously, the investigation of the gas tensions of the cerebro-spinal fluid has been deferred, awaiting the results of the experiments just quoted, and at present I am unable to give any figures.

The object of these researches is to see if the cerebro-spinal fluid can, by virtue of its chemical composition and gas tensions, function as the lymph of the brain. It must, however, always be borne in mind that the fluid which we withdraw by lumbar puncture may be the fluid coming from the perivascular lymphatics of the brain diluted by the secretion of the choroid plexus. This fluid does not, however, correspond to ordinary tissue lymph, even if it were diluted, for the following reasons.

The composition of the fluid is against it being a transudation from the blood or a lymphatic secretion, and the following facts prove this conclusion: (1) It contains 0·02 per cent. of proteins against 7 per cent. in blood plasma; (2) it contains 0·02 per cent. of proteins against 4·5 per cent. in body lymph; (3) there is an absence of lipochrome; (4) there are no leucocytes in the normal fluid; (5) in enteric fever there is absence of agglutinins; (6) it has no hæmolytic action on the blood corpuscles of other animals; (7) it contains no alexins.

Moreover, Cavazzani studied the effect of injection of lymphagogues of Heidenhain—e.g., peptone, extract of eel's blood, glucose, chloride and iodide of sodium—and although in some instances the rate of flow was increased, the amount of ash was not increased. Capelletti has shown that in dogs ether and pilocarpine increase the rate of outflow, atropine and hyoscyamin diminish it, and amyl nitrite produces no effect.

In general with a few exceptions experimental observations on men and animals have shown that drugs administered by the mouth or subcutaneously do not pass into the cerebro-spinal fluid; this rule also applies for bacterial toxins; neither Blumenthal nor Jacob could find tetanus toxin in the cerebro-spinal fluid when injected subcutaneously into goats. Ransom confirmed this in dogs and rabbits, and only in two of many cases recorded have the results of examination shown the tetanus poison in the cerebro-spinal fluid. In has long been known that in the great majority of cases of jaundice the brain is not stained with bile, nor is the cerebro-spinal fluid coloured by the bile. I only remember seeing it on one or two occasions in a large post-mortem experience. Later on I shall consider the effects of injection of toxic and other substances into the subarachnoid space. The facts I have mentioned all speak against the fluid being either a transudation or lymph secretion, although it is generally admitted that the perivascular lymphatics open into the subarachnoid space. Where does it come from?

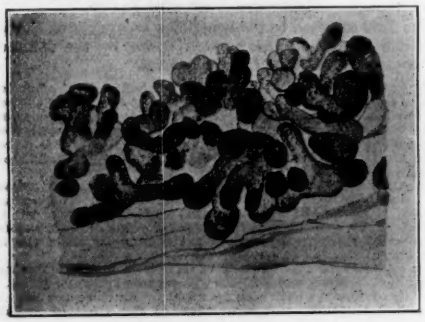
SOURCE OF THE CEREBRO-SPINAL FLUID.

Willis in 1664 called attention to the glandular nature of certain reddish granulations (the choroid plexus). The cerebro-spinal fluid is found in all vertebrates, and Pettit and Girard in 1902 published a monograph on the secretory function and morphology of the choroid plexus of the central nervous system, which embraced the systematic study of the plexuses in different animals belonging to different classes of

vertebrates. They state that Faivre in 1854 affirmed the intimate relation of the choroid plexus with the cerebro-spinal fluid. The works of Luschka, and the more recent work of Kingsburgh, Findlay, Galeotti, Studnicka, together with the physiological researches of Cavazzani and Capelletti, have progressively tended to support this view of the source of the cerebro-spinal fluid.

Pettit and Girard have been able to establish a generalised secretory function of the choroid plexus in the different

FIG. 1.



Small choroidal granulation obtained from a sheep's brain immediately after death stained by the vital methylene-blue method of Dogiel. The vacuolated appearance of the cells on their surface is well shown. Magnification 80.

classes of vertebrates; moreover, by the administration of substances endowed with a hyper-secreting action they were able to cause variations in the activity of these structures and corresponding histological changes in the cells covering the plexus.

I have examined the choroid plexus in the human subject obtained in some instances soon enough after death to stain well with the vital methylene blue method. I throw on the screen

FIG. 2.

Photomicrograph of a section of the choroid plexus of the human subject stained by Giemsa fluid. The cells are all vacuolated: at (*a*) the section has divided a cell, showing a vacuole, quite superficial; above this there is a cup as if a vacuole in an adjoining cell had discharged the fluid content. Magnification 650.

lantern slides illustrating the structure of the human choroid obtained from the lateral ventricles. The first is a drawing by Dr. Edgar Schuster of a small piece of the choroid stained by vital methylene blue fixed with molybdate and mounted in Canada balsam; the specimen is not a section but a piece of about the size of the point of a large pin; it is one of the granulations just visible to the naked eye, and this again we see is made up of numbers of microscopic granulations clothed with spheroidal epithelial cells (Fig. 1). The appearance is just such as we would expect if the cells secreted the cerebro-spinal fluid.

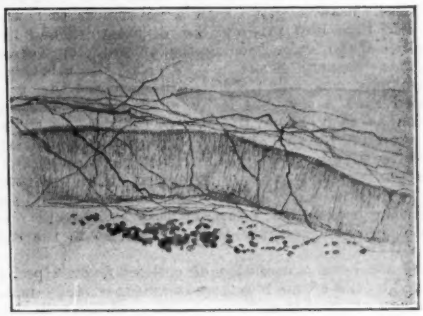
In sections under a higher power we are able to make out more definitely the structure of the plexus. Tufts of vessels are seen surrounded by a loose connective tissue covered by a single layer of cubical, spheroidal, or polyhedral cells lying on a basement membrane (Figs. 2 and 3). Around the

FIG. 3.

The same section as Fig. 2; the polyhedral cells, supported by a delicate connective stroma, are seen to cover vascular finger-like tufts. Magnification 200.

arteries and arterioles and lying in the loose connective tissue numerous nerve fibres are seen in the form of a plexus, but I have not been able to follow the terminal fibrils between the cells. This plexus of nerve fibrils from the choroid plexus of the sheep is well shown in this drawing by Dr. Schuster (Fig. 4).

FIG. 4.



A section from the same preparation as Fig. 1 showing a plexus of nerves around an artery; some fibres may be seen entering into the connective tissue stroma of the gland. Magnification 50.

I will now project on the screen a photomicrograph of the human choroid plexus under a magnification of 650 diameters. In one there are many more vacuoles in the cells than in the other. In one cell of this specimen you see a clear vacuole quite near the surface; in the border of the adjoining cell you observe a cup-like cavity, just such as one would expect if fluid had escaped from one of the vacuoles (Fig. 2). Comparison with the lacrymal gland shows that the epithelial cells of the choroid plexus present a very similar appearance. The histological evidence is all in favour

of the choroid plexus being a gland with an external secretion, but with an internal destination; it would thus constitute a mixed type of gland intermediate between a gland with a duct and a ductless gland. The mode of formation of this gland is effected in an inverse manner, epithelial invagination for the gland with an excretory duct, ependymal invagination for the choroid plexus. In the former case the vascularisation is peripheral, in the latter it is central.

If we can accept these observations as conclusive proof that the choroid plexus is the source of the cerebro-spinal fluid and that it is continually secreting this fluid, then we can understand its unique chemical composition and its freedom under normal conditions from all corpuscular elements. There is abundant evidence that this fluid is continually being secreted, for Matthieu has collected a number of cases in which large quantities of cerebro-spinal fluid have drained away daily in consequence of injuries of the subarachnoid space by which a communication was established with the exterior. Surgeons have often recorded observations on patients who, after fractures of the base of the skull or extirpation of sub-basilar polypi, have lost large quantities of fluid amounting in the 24 hours, in some cases, to between one and two litres (Billroth, Verneuil, Routier, Tillaux). Halliburton, Hill, and StClair Thomson have also recorded observations of a case of dripping of large quantities of cerebro-spinal fluid from the nose.

An argument in favour of the cerebro-spinal fluid being in the main secreted by the choroid plexus in the lateral ventricles is afforded by the effects of increased intracranial pressure arising from interference with the escape of the fluid from its principal source in the lateral ventricles. I do not intend to discuss fully the subject of hydrocephalus,[1] but certain interesting cases which have occurred in my practice or have come under my notice at necropsies are instructive. They are cases of internal hydrocephalus caused by non-malignant slow-growing tumours of the third ventricle, and one case of chronic basic meningitis caused by caries of the petrous bone. All four cases had well-marked signs of increased intracranial pressure, vomiting, headache, optic neuritis, tremors, fits, and drowsy stupor, with progressive mental enfeeblement, so that the diagnosis of general paresis was made in all cases except one, which was under my care in Charing Cross Hospital.

The patient was a married man aged 32 years; the first symptom noticed was that while out walking he was attacked with drowsiness and headache followed by a fit; after this he was subject to frequent attacks of a similar nature from which he recovered. Eventually he died, and at the necropsy a small tumour was discovered loosely attached to the choroid, which from time to time could easily have taken up such a position as to block the iter, and thus lead to distension of the third and lateral ventricles of the brain. Seeing that the symptoms came on with drowsiness and headache—this condition ushering in a fit—we may conclude that at this time the tumour had attained such a size that if by chance it fell into such a position as to block up the iter of the third ventricle the fluid secreted by the choroid plexus accumulated in the lateral ventricles, which would, of course, necessitate the prone position and possible dislodgement of the tumour, thereby the escape of the fluid into the subarachnoid space, and sooner or later the return of the patient to his normal state of consciousness, at least this was so in the earlier stages of the illness.

Here we have a condition of cortical anæmia produced followed by the effects like those of an experiment—namely, drowsiness, loss of consciousness, followed by epileptiform convulsions, and towards the end a persistent dulness of comprehension, failing memory, and slowness of ideation, the result of changes in the cortical cells. Doubtless the drowsy stupor and lethargy which come and go in syphilitic basic meningitis are largely due to internal hydrocephalus, produced by the obstruction to the outflow of cerebro-spinal fluid secreted in the lateral ventricles by the choroid plexus. As soon as the pressure rises to a certain degree the obstruction is overcome, and an escape takes place into the subarachnoid space, whence it can flow from the cranial cavity in the manner previously indicated.

These symptoms of internal hydrocephalus, moreover, support the view that the cerebro-spinal fluid is, for the most part, secreted by the choroid plexus contained in the lateral ventricles.

In support of the statement that the choroid plexus secretes the cerebro-spinal fluid, I may mention that at the last meeting of the Physiological Society Halliburton and Dixon stated that an intravenous injection of the saline extract of the choroid plexus produces in dogs a marked increase in the rate of flow of the fluid from the cannula placed in the subcerebellar cisterna. Extract of the brain produces the same result but not so marked.

DESTINATION OF THE FLUID.

The fluid secreted in the ventricles escapes from the fourth ventricle into the subarachnoid space by the foramen of Majendie and the foramina of Luschka.

The foramen of Majendie.—When the cerebellum is raised posteriorly so as to expose the tela choroidea one sees at the level of the point of the calamus scriptorius a round or oval opening with irregular borders as if torn. This orifice connecting the fourth ventricle with the subarachnoid space was first pointed out by Majendie, and has since been called after its discoverer. It is situated in the mid line and measures 7–8 mm. in length by 5–6 mm. in breadth.

Foramina of Luschka.—These are a pair of lateral orifices connecting the fourth ventricle with the subarachnoid space. They occupy the external extremity of the lateral recess which the cavity of the fourth ventricle forms and from which emerge the origin of the mixed nerves. Through the foramina of Luschka the choroid plexus of the fourth ventricle passes.

The existence of the foramen of Majendie has been doubted by Cruveilhier, Reichert, and Kölliker who regarded it as an artifact. The foramina of Luschka have been described by Marc Sée and Hess. The last-named anatomist met with them 51 times out of 54 subjects examined; they are, therefore, nearly constant.

The fluid having escaped into the subarachnoid space fills up all the spaces, cracks, and crevices; at the base of the brain, therefore, it is more abundant than on the convexity; it forms what are termed lakes, rivers, and rivulets (cisterna and flumina). The quantity of fluid contained in the subarachnoid space, ventricles of the brain, and central canal of the spinal cord is about 100 c.c. to 130 c.c., and there is every reason to believe that this fluid is continually being secreted, for experiments on animals and observations on man show that a large quantity of cerebro-spinal fluid can be drawn off by lumbar puncture and soon be replaced. But the fluid cannot be continually secreted and not flow away. According to one view, it escapes along the lymphatics of all the cranial and spinal nerves, thus reaching the receptaculum chyli and thoracic duct, passing through the paravertebral lymphatic glands in its passage, and eventually, therefore, arriving in the venous circulation.

Flatau's experiments by injection in the rabbit (*viâ* the olfactory nerve in particular) demonstrate that the fluid follows the course of the perineural sheath; then passes directly into the lymphatic networks of the nasal mucosa; thence it arrives at the glands of the neck and the naso-pharyngeal cavity; but, according to Flatau, the injection never runs to the surface of the mucosa, as Retzius asserted. Some of the cerebro-spinal fluid probably does escape along these perineural lymphatics, and it is probable that these are the avenues of infection in the production of tuberculous, syphilitic, epidemic, and pneumococcic meningitis.

However, the observations of Leonard Hill and Cushing favour the view that the fluid contained in the cerebral subarachnoid space and perivascular canalicular systems finds its exit from the cranium by means of the veins opening into the longitudinal sinus. Hill found that

> Saline injected at any pressure above the cerebral venous pressure disappears from the cranio-vertebral cavity; the higher the pressure, the more rapid its disappearance. As a result of injecting saline coloured with methylene blue, fluid can be traced passing straight into the venous sinuses. In so short a time as 10 to 20 minutes, the blue colour may be found secreted in the stomach and in the bladder. On the other hand, the lymphatics in the neck in so short a time are not coloured. After an hour's steady injection the deep cervical and lymphatic glands are seen to be only partly tinged with the blue colour.

Cushing, after producing intracranial pressure by injection of normal saline solution, states that the fluid does not escape readily from the subarachnoid cavity; even under pressure not more than from 60 c.c. to 100 c.c. escape in half an hour perhaps. He agrees with Adamkiewicz that there exists a free communication between the subarachnoid space and the longitudinal sinus. He questions the correctness of Key and Retzius's hypothesis that the Pacchionian glands act as a filter, for, as he remarks, they do not exist in very young children or in some of the lower animals. The nature of these openings of the subarachnoid space is not known, but

[1] The subject is very fully treated by Sir T. Barlow and Dr. Lees in their article, Simple Meningitis in Children, System of Medicine, Allbutt, vol. vii.

probably they run obliquely forwards, like the veins, into the sinus, and have, like them, a valvular action, so that the fluid can flow into the sinus, but blood cannot flow back. Mercury injected into the subarachnoid cavity found its way into the sinuses, jugular veins, and right heart. A non-absorbable gas introduced into the subarachnoid space produced death by cardiac air-embolism, and, if the jugulars were exposed, bubbles of it could be seen pouring down towards the heart. Exposure of the cervical lymphatics and of the thoracic duct, on the other hand, showed in all instances a complete freedom from gas.

Reiner and Schnitzler injected a saline solution of potassium ferrocyanide into the cranium. This salt very rapidly appeared in the jugular vein. The venous flow was quickened by the injection. On the other hand, injection of olive oil caused compression of the cerebral vessels, and slowed the venous outflow. This rather supposes another way of escape, and I venture to suggest the cerebro-spinal fluid may get into the venous blood by the capillaries.

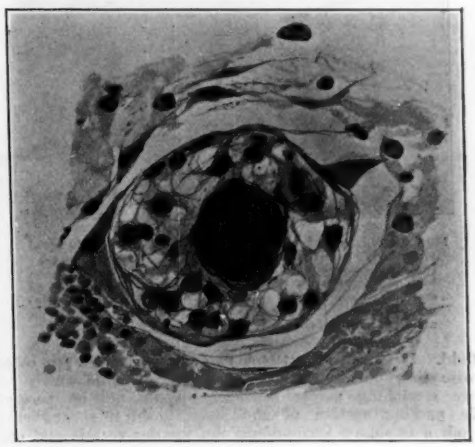
Before giving my reasons for this hypothesis it will be necessary to give a description of the lymphatic sheaths of the vessels of the brain. Testut thus describes the perivascular lymphatics. Robin in 1858 proved the existence of a membrane surrounding the vessels of the central nervous system in the form of a sleeve, leaving an interval between it and the vessels; it is a membranous tube in which the blood-vessel is, as it were, suspended. This is the lymphatic sheath.

The wall of this sheath is very delicate and is continuous with the tunica adventitia. It is constituted, at least for the larger vessels, of extremely fine and delicate bundles of connective tissue which are the branches of flattened plate-like cells of a fusiform or polyhedral shape. The external surface of the sheath is formed by the nervous substance. Its internal surface is towards the vessel from which it is separated by a space which surrounds immediately the vessel. This space which separates the vessel from the pial sheath is traversed by very fine trabeculæ which extend from its external to its internal wall. It is filled by a *clear and transparent fluid* which from the point of view of its morphological significance should be considered as lymph. It contains in variable amount lymph corpuscles, fatty granules, and sometimes even drops of oil. The lymphatic sheaths are observed in the venules and the arterioles, but they are always better developed on the latter than on the former. At the place where the arteriole divides into capillaries, the lymph space terminates in a cul-de-sac; it is not only that the sheath ceases to exist but at this situation it is applied against the wall of the capillary, leaving no recognisable space between them.

The lymphatic sheaths open into the subarachnoid space, which thus become their common rendezvous; *vice versâ* it may be asserted that the lymphatic sheaths of the vessels of the central nervous system are intracerebral and intraspinal prolongations of the subarachnoid space. Eberth has pointed out the existence of a continuous endothelial covering on one or other of the walls. This endothelial covering also occurs on the trabeculæ which traverse the lymphatic space. His by successful injection experiments has proved the existence of two sheaths, the adventitial sheath of Robin, and another periadventitial which surrounds it like a sleeve. His affirms that the two sheaths are entirely independent of one another; that is to say, there is no intercommunication. On the central side the periadventitial sheaths are connected with the pericellular spaces. On the peripheral side they end in a series of lacunæ which occur between the external surface of the central nervous system and the pia mater which covers them; according to the region these are termed epispinal, epicerebral, and epicerebellar spaces of His. Testut remarks that the periadventitial sheaths are considered by some anatomists to be artifacts and have not the same significance as the pericellular spaces. They are simply interstices nearly virtual in ordinary conditions, but, in consequence of injection or of pathological conditions, capable of enlarging and acquiring a real capacity. As in the adventitial sheaths, the lymph circulates from within out and very probably passes by simple filtration into the subarachnoid space by at present little understood communications.

A study of the histological conditions met with in the perivascular sheaths in chronic meningo-encephalitis of syphilis, general paralysis, and sleeping sickness throws some light upon the structure of the perivascular lymphatics; in the normal state the structures are too delicate to permit of clear observation, but when owing to chronic irritation the morphological elements actively proliferate, it may then be seen that the appearances coincide with those of chronic inflammation of lymphatic structures elsewhere in the body. Sleeping sickness offers the best material for the study of the perivascular sheath; in this disease the connective tissue cells of the pial sheath proliferate and form a dense network, in the meshes of which are abundant lymphocytes and plasma cells. I came to the conclusion that the plasma cells and the lymphocytes were the result of the proliferation of the endothelial cells. This chronic perivascular lymphatic cell proliferation is the same as, and continuous with, the cell proliferation of the lepto-meninges. It is associated with a proliferation of the special connective tissue elements of the nervous system—the neuroglia (Fig. 5). The normal

FIG. 5.



Inflamed lymphatic sheath of a small spinal artery in a case of punctate syphilitic myelitis. The proliferation of the branched connective tissue cells of the pial sheath is well seen. Drawing by Dr. Edgar Schuster. Magnification 650.

cerebro-spinal fluid contains no cell elements, but in all affections causing a chronic meningo-encephalitis the fluid contains lymphocytes, generally speaking, in proportion to the severity and widespread extension of the meningo-encephalitis, whether it be due to syphilis, parasyphilis, sleeping sickness, or tuberculosis.

I have studied the histology of the perivascular lymphatics in the brains of animals in which Dr. Leonard Hill had produced experimental anæmia by ligature of three or more of the cerebral arteries—e.g., two carotids and one vertebral in monkeys, the animals dying or being killed at various periods of time after the operation. The vessels, especially the arteries, arterioles, and capillaries, are in consequence of the ligation of the trunk arteries empty and collapsed, yet the brains on exposure were not shrunken; they were quite pale and watery, and microscopic examination indicated that the reason that the brains had not shrunken was the fact that the cerebro-spinal fluid had filled up the spaces which would otherwise have existed from the blood-supply having been cut off. Small portions of the brains were generally hardened in alcohol, but specimens were prepared from one monkey's brain in which experiment two carotids and one vertebral were ligatured, the animal dying 23 hours after. The brain of this monkey was removed and placed in Mann's picric and perchloride of mercury solution (Figs. 6 and 7).

Most of the experimental anæmic brains of the monkeys that died as a result of the ligature of the vessels showed a perivascular canalicular system continuous on the one hand with the perineuronal spaces, and, on the other hand, with the subarachnoid space. The perivascular spaces are clear and transparent, therefore they cannot contain ordinary

lymph because an amorphous deposit of coagulated albumin would have been precipitated by the perchloride and picric fluid. It cannot, however, be an empty space, and seeing that it is continuous with the subarachnoid space it is reasonable to presume that it is filled with cerebro-spinal

FIG. 6.

Photomicrograph of the brain of a monkey—experimental anæmia—showing two vessels with the dilated perivascular lymph sheaths continuous with the subarachnoid space; both are distended with a clear fluid; fine trabeculæ can be seen stretching across from the wall of the vessel to the nervous substance, therefore the dilatation is not due to an artefact. Magnification 200.

fluid. It is not an artifact due to the hardening, otherwise the delicate strands of connective tissue which you see stretching across the space would not be present. In another section of the same brain this canalicular system is shown surrounding the smaller vessels and con-

FIG. 7.

Photomicrograph of the subcortical white matter of the same specimen as Fig. 5, showing the dilated perivascular lymph spaces distended with a clear fluid; the contained blood-vessels are collapsed and empty. Magnification 200.

nected with the perineuronal spaces, and here again it may be observed that there is no evidence of any protein-containing lymph (Fig. 8). Occasionally the perineuronal spaces can be seen in direct communication with the space around a capillary (Fig. 9). These perineuronal and perivascular lymphatic spaces and their interconnexions can only be seen in abnormal conditions. In experimental anæmia a space can be seen around the capillaries, and stretching across from the wall to the surrounding nervous tissue are delicate connective tissue threads, as this photomicrograph shows. It would thus seem probable that a canalicular system surrounding the cells and vessels of the brain exists which is in direct communication with the subarachnoid space. This canalicular system contains a fluid of non-protein nature (probably, therefore, the cerebro-spinal fluid), which may serve as the ambient fluid of the neurons and play the part of lymph to the central nervous system.

I will here quote a passage from the article on Meningitis by Sir T. Barlow and Dr. Lees. "We may here add that cerebro-spinal fluid as obtained from any point below the fourth ventricle cannot be an absolutely pure secretion; it must contain waste products resulting from cerebral metabolism, for into the subarachnoid space surrounding the brain open the lymphatic sheaths of all the cerebral arteries, and Dr. Bevan Lewis has shown that the nerve cells of the brain are placed within pericellular sacs, each of which has a definite lymphatic connexion with the wall of a small blood-vessel."

MECHANICAL EFFECTS OF THE CEREBRO-SPINAL FLUID.

The blood-vessels of the cerebro-spinal axis have comparatively thin walls, and the arteries relatively few muscular fibres and vaso-motor nerves. The uniform

FIG. 8.

Photomicrograph of the cortex cerebri of a monkey. Experimental anæmia. The dilated perivascular spaces are seen to be connected with the dilated perineuronic spaces; this is rendered clear by the empty condition of the small blood-vessels. Magnification 250.

pressure of the fluid sleeve which surrounds the blood-vessels serves to support their column of blood. The whole central nervous system being contained in a closed space, the cerebro-spinal fluid fills up all the space which is not occupied by tissues or blood, serving thereby to equalise the pressure throughout the whole cranio-spinal cavity; moreover, it acts as a water cushion, especially at the base of the brain, protecting the vital structures of the medulla from the shock of commotion and concussion. It serves also as a self-adjusting mechanism by maintaining a uniform equalisation of the blood-supply to the nerve elements during the rhythmical variations of respiration and circulation. The question arises, does it play the part of the lymph?

FUNCTION OF THE CEREBRO-SPINAL FLUID.

If the cerebro-spinal fluid serves as the lymph of the brain, it may be asked, How is it that generally, with few exceptions, experimental observations on men and animals have shown that drugs and bacterial toxins administered by the mouth and subcutaneously do not pass into the cerebro-spinal fluid? Experiments, however, have shown that very much smaller quantities of these same drugs and bacterial

toxins injected into the cerebro-spinal fluid of the subarachnoid space produced much more marked and a much more rapid onset of symptoms.

Thus Lewandowsky observed that a few centigrammes of sodium ferrocyanide injected into the subarachnoid space rapidly produced toxic symptoms, whereas from 4 to 6 grammes injected into the jugular vein in rabbits of the same weight produced no specific symptoms. This was not due to the salt solution employed, for a 10 per cent. saline solution injected into the subarachnoid space produced only slight effects.

Behring found that hens injected subcutaneously or intravenously with tetanus toxin suffered no effects, whereas when it was injected into the cerebro-spinal fluid they died from typical tetanus.

Jacob after introduction of methylene blue and iodine into the cerebro-spinal fluid was able to demonstrate their presence in the brain several days later, although these substances were now no longer present in the cerebro-spinal fluid. These researches indicate that substances in the cerebro-spinal fluid can directly act upon the ganglion cells of the brain and spinal cord. Lewandowsky affirms that this takes place by way of the lymph channels.

According to the anatomical proofs of Schwalbe, Key, and Retzius and the physiological observations and experiments of Quincke and Jacob, the perivascular lymphatics open freely into the subarachnoid space. They injected methylene blue and cinnabar, also ferrocyanide of sodium, converting the latter into Prussian blue, and showed in a most convincing manner under the microscope the existence of the substances injected in the perivascular spaces. Lewandowsky, after injection of methylene blue, also observed imbibition phenomena which were likewise observed by Bruno.

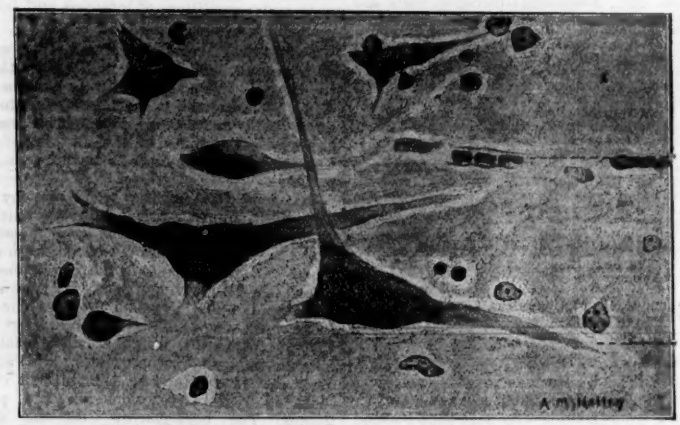
This experimental evidence tends to support my contention that the cerebro-spinal fluid comes into relation with the nerve-cell elements and therefore may be the ambient fluid. But if substances are unable to pass from the capillaries into the lymph spaces, experiments show that substances are able to find their way rapidly into the blood when injected into the subarachnoid space. This may be by the channels already alluded to. But I have shown that the perivascular lymphatics open into the subarachnoid space, and if these perivascular lymphatics contained ordinary tissue lymph the cerebro-spinal fluid would contain a very much larger amount of protein and lymph cells than it does; there must be some medium of exchange between the blood in the capillaries and the neurons, and, therefore, why not the cerebro-spinal fluid?

Suppose, then, it be granted that the cerebro-spinal fluid may function as the lymph of the brain, and is the ambient fluid in which exchanges take place between the blood in the capillaries and the neurons, can we explain why substances do not pass out of the capillaries into the fluid? Most authorities are agreed that there is no lymphatic sheath on the capillaries, so that we have only, so far as we know, the wall of the capillary intervening between the blood and a fluid which is similar to blood plasma in its crystalloid diffusible substances although not identical, for its alkalinity is only half that of the blood and the sugar it contains is less.

The force which determines a movement or exchange between solutions in immediate contact separated by a more or less permeable membrane is termed the osmotic pressure. By this force substances dissolved are displaced to situations where they are less concentrated. Water moves in an opposite direction. This movement constitutes the phenomena of diffusion and the osmotic pressure is the motive force which animates matter and produces diffusion of two liquids unequally rich in dissolved molecules separated by a membrane; the more concentrated liquid attracts a portion of the water contained in the less concentrated liquid. The osmotic pressure of a fluid is proportional to its dissolved molecules—in other words, to its molecular concentration. In human physiology the blood serum is generally taken as a standard of osmotic pressure, and the terms isotonic, hypertonic, and hypotonic solutions are terms used in reference to normal blood serum.

Is it a reasonable hypothesis that the osmotic pressure as regards water and carbon dioxide is from the ambient cerebro-spinal fluid to the blood, and that certain of the salts and sugar pass from the blood to the fluid through the wall of the capillary? As we have no precise knowledge of the composition of the cerebro-spinal fluid as it leaves the cells of the choroid plexus, we can only say it is possible that this fluid is not exactly the same in composition as that which is contained in the subarachnoid space. By this I mean to infer that the fluid which is secreted by the epithelial cells of the choroidal gland in its passage from the subarachnoid space along the perivascular lymphatics back to the subarachnoid space may receive substances—e.g., an addition of sugar and possibly some salts. Whether this fluid, as it is secreted by the choroid plexus, is the same as that withdrawn from the subarachnoid space by lumbar puncture is the crucial point which requires to be settled before the hypothesis I would draw can be maintained. The hypothesis is that the fluid as it circulates in the perivascular and pericellular channels may give up water and carbon dioxide and take up oxygen and sugar. Seeing that there is no proof to my mind that the fluid contains a glycolytic ferment, it may, if this hypothesis is true, be assumed that the ganglion cells produce the necessary glycolytic ferment by which the sugar can be converted into neural energy. The observations and experiments are, however, all in a preliminary stage and much work still is necessary before any safe conclusions can be drawn. The results so far obtained, however, are sufficiently

FIG. 9.



Drawing of a small portion of Fig. 1. The large pyramidal cells are seen with their perineuronic spaces filled with a non-coagulated fluid. The apical process of one cell is seen in a canalicula which is directly connected with a space around a capillary. Magnification 500.

encouraging to lead to a continuance of the work. In my next lecture I propose to deal with the subject of the cerebro-spinal fluid from the pathological point of view.

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A MEDICAL VISIT TO LE TOUQUET.—Le Touquet, a health resort near Boulogne, at least as well known for its golf course as for other reasons, was visited last week end by a party of medical men from London who were shown round the place by the Mayor and Mr. Stoneham representing the Le Touquet Syndicate. Among the party were Dr. F. M. Sandwith, Dr. Purves Stewart, Dr. Leonard Williams, Dr. Camac Wilkinson, Dr. F. J. McCann, Mr. H. Paterson, Mr. E. Canny Ryall, Mr. Charles Ryall, Mr. C. Gordon Watson, Dr. Eric Pritchard, Dr. J. Nachbar, Mr. G. Rowell, Mr. Rolf Creasy, and Mr. L. Eliot Creasy. The party were first conducted to the pavilion where the saline water of the place was dispensed. The analysis of this water shows that the resemblance in clinical results to the Contrexéville water is borne out by the chemical and other properties. The beautiful grounds of the charming casino in the pine woods opposite the Hermitage Hotel and the arrangements for safe bathing on the shelving sands of Paris Plage adjoining the Le Touquet forest came in for favourable notice. At a banquet given in honour of the visitors, held at the Golf Hotel, Dr. Leonard Williams, speaking in French, thanked the authorities of the different places for their courteous hospitality. The party were entertained also at the Atlantic Hotel at a luncheon, when Dr. Sandwith delivered an oration in French on the therapeutical value of climatic and hydropathic treatment. Dr. Purves Stewart voiced the sentiments of the visitors also in French, these three speeches going far to remove the time-honoured reproach to Englishmen that they never really know any language but their own. The Le Touquet Syndicate and the Paris Plage Municipality gave two cups for a golfing competition among the visitors. The competition resulted in the first prize going to Dr. Camac Wilkinson, and the second to Mr. Canny Ryall.

The Croonian Lectures

ON

THE BEHAVIOUR OF THE LEUCOCYTES IN INFECTION AND IMMUNITY.

Delivered before the Royal College of Physicians of London on June 14th, 16th, 21st, and 23rd, 1910,

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LECTURE II.[1]

Delivered on June 16th.

MR. PRESIDENT AND GENTLEMEN,—In the preceding lecture I attempted a short sketch of the chief doctrines of immunity, and I indicated my own conviction that the primitive means of defence lay in phagocytosis, and that this process still remains the main element in such defence, even in the higher vertebrates. So far as bacteria are concerned the chief phagocytes are admitted to be the polynuclear leucocytes, and it is to these and to their behaviour in the body under conditions of infection and immunity that I have now to draw your attention.

I wish that I could deal equally fully with the other kinds of leucocyte. That the lymphocytes, the eosinophils, and the basophils have some duties to perform in connexion with bacterial infections is not improbable, for they may exhibit remarkable fluctuations in infective conditions. But we know almost nothing of the meaning of these fluctuations. I shall have in some cases to record them, but I can do little more.

The leucocytes of the blood are, by general consent, specialised representatives of the primitive wandering cells seen in the body cavity of the lower invertebrates. The idea that the different types of leucocyte in normal mammalian blood are merely stages in the development of a single kind of cell is a defunct hypothesis. It is now clearly recognised that the lymphatic system provides one kind of cell—the *lymphocyte*—ungranulated to ordinary staining methods, though not to all, which seems specially associated with chronic inflammatory processes, and according to many observers is related to the plasma cells, and through them to certain reactions on the part of the fixed tissues. The bone-marrow, on the other hand, apart from such tiny foci of lymphoid tissue as it may contain, supplies the blood with at least three kinds of leucocyte, distinguished by the possession of specific granulations in their protoplasm—oxyphil, basophil, and neutrophil. The parent cells of these, as seen in the bone-marrow, are mononuclear, and are known as *myelocytes*. The adult cells, as seen in the blood, have a lobed or twisted nucleus, often apparently separated into distinct masses. The more powerful nuclear stains commonly reveal threads of chromatin connecting the separate masses, and hence the term "*polymorphonuclear*" is more correct than "*polynuclear*." The polymorphous character of the nucleus is chiefly conspicuous in the neutrophils of human blood, and when one speaks of polymorphonuclear cells it is these which are meant. In other mammals the granulations in the protoplasm of these essentially polymorphonuclear cells are not necessarily neutrophil. In the rabbit, with which animal all my experimental work has been performed, they are "amphophil," staining both with acid and basic dyes. But the amphophil leucocytes of the rabbit are the strict homologues of the neutrophil polymorphonuclears of man, and for convenience I shall refer to them simply as "polynuclears."

FUNCTIONS OF THE POLYNUCLEAR LEUCOCYTES.

Let me turn now to the "polynuclear" leucocytes, neutrophil in man, amphophil in the rabbit, and consider what we know of their functions. They are the most actively mobile of the cells in the body and seem to possess

[1] Lecture I. was published in THE LANCET of June 25th (p. 1737), 1910.

in special degree the property of being attracted or repelled by chemical stimuli. They are, further, the most actively phagocytic cells, and this function is pre-eminently displayed in relation to bacteria. They are the "microphages" of Metchnikoff. There is ample evidence that in most cases they are able to digest and destroy the microbes which they take up, and they must do so by the aid of a digestive secretion provided by their own protoplasm. This is not the only enzyme with which these leucocytes appear concerned; there are those who maintain that the "thrombo-kinase" or activating element in the formation of the fibrin ferment is derived from them. Ainley Walker has, indeed, suggested a general analogy between enzymes and bacterial antibodies. He brings forward evidence with regard to several enzymes that when inactivated by heat they can be reactivated by a "kinase" which may be complement under another name, and traceable to the leucocytes. As regards the humoral elements in defence against bacteria there is ground for the belief that an element, at least, of these is of leucocytic origin. Buchner, in the earliest of the humoral theories, was inclined on experimental evidence to trace his "alexin" to the leucocytes. The modern alexin—i.e., the "complement" of Ehrlich, which seems to be the "microcytase" of Metchnikoff, and, according to some, the opsonin of Wright (at least the thermolabile opsonin of normal serum), is with considerable probability to be traced to these cells. The evidence is, of course, circumstantial, but as a working hypothesis we may believe that the leucocytes furnish complement either as a secretion or by their disintegration. If so, we must look upon them as incomparably the most important cells in the body as regards defence against bacteria, for not only are they the chief mechanical agents in phagocytosis, but they furnish also a fundamental element in humoral defence. Whether we are disciples of Metchnikoff or Ehrlich, the polynuclear leucocyte stands out as the cell pre-eminent in defence.

THE DISTRIBUTION OF POLYNUCLEAR LEUCOCYTES IN THE NORMAL BODY.

I do not know that any physiologist has attempted to determine the distribution of this cell in the normal body. In the course of the experiments I am about to describe I desired information on this point; the only paper I have found which mentions the subject is one by Bruce.[2] This observer, studying the leucopenia which follows the injection of peptone into the circulation in the rabbit, examined the distribution of the polynuclear cells in the organs of two normal rabbits, finding them chiefly abundant in the spleen and in the lung. It is now generally admitted that the red marrow of the bones is the sole normal birthplace of the polynuclear leucocyte. It is well known that in its mature form it is the most abundant circulating leucocyte in the blood. It is conjectured that its grave may be the spleen. At the time when I began to investigate the subject I was unaware of Bruce's paper, but the methods which I devised are substantially identical with those he used, and my results are in harmony with his. I have, however, endeavoured to obtain data expressing the number of polynuclear leucocytes per cubic millimetre of tissue.

The rabbit lends itself with particular ease to the investigation. The amphophil granulations in its polynuclear leucocytes are large and conspicuous, and in sections stained with Ehrlich's triacid stain these cells stand out so plainly that they cannot be overlooked or confused with other cells. My method has been as follows. A healthy normal rabbit is killed either by a blow on the head or better by the intravenous injection of a small dose (½ cubic centimetre of a 5 per cent. solution) of potassium cyanide. The moment it is dead the various tissues and organs are removed and placed in 10 per cent. formalin. After one or two days appropriate blocks are cut and soaked for 24 hours in normal (0·9 per cent.) saline solution. Each block is next measured in millimetres as regards its three diameters, and then passed, through weak and strong alcohol, into xylol and lastly into paraffin. Before the final embedding in paraffin measurements of the three diameters are again made and recorded. The object of these measurements is to determine the degree of shrinkage of the blocks in the process of embedding. The measurements of the three diameters of the fresh hardened block are multiplied together and divided by the product of the three similar measurements of the shrunken block ready for embedding in paraffin. The result is a figure by which, when the figures obtained from the stained section are divided they are reduced to terms of fresh tissue. In the case of most organs, lung, liver, spleen, kidney, &c., I find this factor approximately 2. If one is careful to leave the block for not more than two or three hours in melted paraffin it shrinks to about one-half of its cubic content when fresh.[3] In the case of most organs I am content to accept 2 as an average shrinkage factor without the trouble of actual measurement in each case. With the bone marrow this is not so, as the varying fat content makes the shrinkage much more variable; I have obtained shrinkage factors from 1·23 to 11·65, and I always take measurements in each case.

Sections are cut in paraffin in the usual manner and are then stained for from one to three hours in Ehrlich's triacid stain, washed carefully in water and in alcohol, cleared in xylol, and mounted in balsam. If, now, one knows the superficial area of a given microscopic field, and the thickness of the section—data which are easy to obtain—it is clear that one can count the numbers of any sufficiently conspicuous cell in the known volume of tissue seen in the field, and go on to find the average number of many fields. As a rule, the whole field offered by a 1-12th inch oil immersion lens is too large for counting, besides being out of focus at the edge. Messrs. Leitz have made for me a metal disc with a square hole in it. This, when placed in the eyepiece of the microscope, restricts the field to a convenient area for counting. Having obtained the average of a sufficient number of fields (60 to 100), the numbers of the cell in question can be calculated per cubic millimetre of tissue, and this figure divided by the shrinkage-factor gives the number per cubic millimetre of fresh tissue. The method, which I first used in the case of bone marrow,[4] cannot pretend to absolute accuracy. One is apt to count fragments cut off tangentially from cells belonging to adjacent sections, so that no cell should be counted which does not present a nucleus. Nevertheless, I find it a method capable of sufficient accuracy to enable a reasonable comparison to be made between different organs or between the same organs in different animals.

Applying it to the tissues and organs of two normal rabbits, I obtained results which were concordant in the two animals, and which showed very remarkable differences in the number of polynuclear leucocytes in different tissues. In two tissues—viz., the spleen and bone marrow—it is impossible to state the number of *polynuclear* neutrophiles with accuracy, for a different reason in each case. In the spleen I find them absent from the lymphoid tissue of the Malpighian bodies, but extremely abundant in the spleen pulp. Here, however, they are in various degrees of disintegration. The opinion that the spleen pulp is the grave of the leucocytes is fully confirmed from my observations; in no other tissue have I found these disintegrating leucocytes. I find in the spleen every gradation between the perfect cell and amorphous masses in which the neutrophil granulations have fused together and are evidently breaking down. The eosinophil cells seem to break down into similar masses. In the counts which I give below I have tried to include only such polynuclear neutrophils as were still clearly recognisable. In the bone marrow, on the other hand, the difficulty is to distinguish them from the neutrophil myelocytes. In other tissues one recognises them by their specific granulations, for the nuclear staining with Ehrlich's triacid stain is by no means deep. I can only give the total neutrophil count for the marrow, including both myelocytes and adult polynuclears. From a series of eight or ten normal rabbits I find this count at the level of the middle of the femur, to lie anywhere between 100,000 and 200,000 neutrophil cells per cubic millimetre of fresh marrow tissue, and of these the majority are certainly myelocytes.

For tissues other than the bone marrow I have obtained the following results and they are borne out by those

[2] Proceedings of the Royal Society, vol. lv., 1894.

[3] Actual figures are:—For lung: 2·01, 1·72, 2·13, 2·27, 2·07, 2·12; for liver: 2·18, 1·93, 2·11; for kidney: 2·33, 2·14, 2·96; for spleen: 2·26, 2·15, 2·15; for brain: 1·61.

[4] See Local Government Board Reports for 1907-08.

which I shall presently relate, derived from abnormal animals.

Tissue.	Polynuclear leucocytes per cubic millimetre of fresh tissue.	
	Rabbit 1.	Rabbit 2.
Spleen pulp	68,000	38,400
Lung	20,000	12,000
Liver	2,900	1,700
Kidney	250	—
Voluntary muscle	—	20
Intestine	—	0
Medulla oblongata	—	0

It is apparent that even if the method I have used were less accurate than I believe it to be, such variations as these must be of deep physiological significance. We might be prepared for a great excess of polynuclear cells in the bone marrow and in the spleen; this, indeed, I find. But the differences in the other organs are enormously greater than those which the mere vascularity of the tissue would explain. The lung, the liver, and the kidney are all very vascular organs, and I know of no differences in the diameter of their capillaries such as could explain the variations seen in the above table. A leucocyte does not easily get through an ultimate capillary; one often finds the polynuclears squeezed into an elongated sausage form in the act of passage, but this is seen equally in lung, liver, or kidney.

Failing any mechanical explanation for the discrepancies in the distribution of the polynuclear leucocytes in the various tissues, it must be assumed that there are physiological reasons underlying them. It would seem that when once these cells are discharged into the blood they tend to be arrested in certain situations, either because they have some function to perform there, or because a sojourn there is requisite for their own needs. In such tissues as brain, muscle, and intestine they would appear to have no function to perform and no benefit to gain. They are hence relatively sparse passengers through the capillaries, and are seen hardly or not at all in sections of such tissues. In the more vascular kidney and liver they are seen in larger numbers, but I am unable to offer any conjecture as to the reasons for this fact. When, however, we turn to the lung we find the polynuclear leucocytes present in altogether disproportionate numbers. After the bone marrow and spleen, the lung tissue, though so largely occupied by air, comes far ahead of any other tissue I have examined in respect of the polynuclear leucocytes present in it. Failing any evidence that the narrowness of the lung capillaries mechanically arrests them, one is tempted to assume that they voluntarily tarry in this tissue. I cannot suggest any special function which they have to perform here; if I may speculate I should suggest that they sojourn here for the sake of oxygenation. I shall presently have to show that this accumulation of polynuclear leucocytes in the lungs is much exaggerated in certain pathological conditions. It may be that if the bone marrow is the birthplace of these cells and the spleen their ultimate tomb, while the blood is their means of transit, the lung may serve as a week-end at the seaside, where they may recuperate their energies. I cannot otherwise explain the accumulation of polynuclears in the pulmonary tissue.

THE CIRCULATING LEUCOCYTES.

My experimental work has all been carried out on the rabbit—an animal which is convenient for the purpose on account of the readiness with which blood can be obtained from the ear.[5] In studying the effects of infections and of vaccines, I have in most cases used the intravenous method of inoculation on account of the rapidity and intensity of the changes induced in the blood when the living or dead bacteria are introduced directly into the circulation. I have as a rule used fairly large doses of bacteria, desiring to produce marked and unequivocal results. By a fairly large dose I mean one or two hundred million bacteria; by a very large dose I mean a thousand million or more. The drawback to this method is that it has little parallel with naturally occurring disease in man or animals; it is only rarely that the body has to respond to the sudden irruption into the blood stream of large numbers of bacteria. In estimating the significance of the results I have obtained this discrepancy must be borne in mind. It is, I think, far outweighed by the simplicity and rapidity with which the effects of the dose are determined. My main object was to study the varying leucocytic response to the presence of bacteria of different kinds, and for this the method sufficed very well.

I employed ordinary hæmatological methods in the work and I have striven to make it as complete and accurate as possible. The complete study of the changes in the circulating leucocytes after a given intravenous dose of bacteria is very laborious on account of the frequent counts which it entails. The immediate effect of the injection is often precipitate and the blood must be examined every few minutes. The routine which I ultimately came to adopt was as follows. A drop of blood is withdrawn from the rabbit's ear to obtain the initial data. The dose of bacteria is then injected, and blood counts made after 1, 2, 5, 10, 15, and 30 minutes; again at the hour, and thenceforward hourly for 5 to 7 hours or more. On the following day two or three counts are made, and thenceforward once or twice a day till the animal is well again or dies. Each time the blood is counted films are made and stained with Leishman's dye; a differential count of 200 or more leucocytes is then carried out at leisure. It thus becomes possible to state the actual numbers of the different kinds of leucocyte present per unit of peripheral blood throughout the course of the experiment, and to represent them in curves on graphic charts. I cannot too strongly insist on the advantages of this method of procedure. Unless differential leucocyte counts are made, important events may be overlooked; a slight but definite polynuclear leucocytosis may be completely masked by a lymphocytic leucopenia. Further, the differential counts afford a valuable check upon the accuracy of the total counts: the lymphocytes and the polynuclears do not vary together as a rule, and when one finds their curves parallel suspicion may justly be aroused as to the correctness of the total counts upon which these are based.

It is not so easy as it might appear to make accurate total counts of leucocytes from a rabbit's ear. I have been compelled to make more than one special set of observations to determine the existence of fallacies; the chief fallacy is that of local leucocytosis. I commonly shave the animal's ear before the experiment begins, as it is thus easier to collect the drop of blood, but I find that the act of shaving induces a local leucocytosis which may easily vitiate the results obtained. Half an hour after simple shaving of the ear the leucocyte count from it may be double that obtained from the unshaven ear, owing, I presume, to slight inflammatory changes leading to an accumulation of polynuclear leucocytes in the small veins and capillaries. If the blood flows freely from the needle prick the fallacy is negligible, but if it flows poorly and any squeezing is employed it is a serious one. I now shave the ear a day or so beforehand.

If one has injected into the circulation living bacteria, and especially pyogenic cocci, fallacies may arise from local inflammatory changes in the animal's ears. Some of the injection may escape into the subcutaneous tissues, and even if counts are taken from the opposite ear the earlier needle pricks may permit of the escape of bacteria, which may then induce inflammatory changes. Counts taken from any inflamed area are open to grave suspicion when they show an apparent leucocytosis. After three years' work at this

[5] This is a suitable place to state the characters of the leucocytes in the rabbit. The average number of these cells per cubic millimetre of blood is not very different from that seen in man, being a little less than 7000. The range of variation in different normal rabbits appears wider than in man, so that in some counts of 15,000 and even 20,000 may be met with, while in others the count may be 2000 or 3000. In my experience these differences depend more on fluctuations in the lymphocytes than in the polynuclears. The lymphocytes are more numerous than in man; on an average they form 50 per cent. of the total, but they may reach 70 per cent., or more. The average number of lymphocytes per cubic millimetre is rather more than 4000. The cell which corresponds to the human polynuclear neutrophil bears so-called "pseudo-eosinophil" or amphophil granulations. These cells form on an average 40 per cent. of the total leucocytes—less than 4000 per cubic millimetre. The eosinophil cells are fewer in the rabbit than in man, forming less than 1 per cent. of the total. The basophil cells are, on the contrary, much more numerous than in man, though very variable in numbers. I have known them to form over 20 per cent. of the total leucocytes in an apparently normal rabbit; the average is 6 or 7 per cent.

subject I am, I trust, sufficiently alive to the danger of these fallacies to have allowed for them in all doubtful cases.

Some of the investigations which I am about to record have been carried out in the course of researches for the Local Government Board during the past few years, partly in conjunction with Dr. M. H. Gordon and Dr. T. J. Horder. I am glad to have the opportunity for summarising this work, and adding to it the special researches which I have carried out in view of these lectures. It is plain that the labour of the hæmatological investigations I have described is too great for a single observer, and I have much pleasure in acknowledging the able assistance of Mr. A. E. Gow in my more recent work. I can only regret that I have not had a longer time at my disposal to pursue the interesting lines of research which the work has opened up.

LEUCOPENIA.

I propose first to give an account of the observations which I have made on diminution in the numbers of the circulating leucocytes. Less attention has perhaps been paid to this than to the increase known as leucocytosis. The subject of leucopenia nevertheless offers more than one problem of importance in connexion with immunity.

The number of circulating leucocytes may be reduced in several ways. They might conceivably be destroyed to an excessive degree, but I know of no good evidence of this. They may be withdrawn from the peripheral circulation and accumulate elsewhere; this is well known to occur. Or the supply of leucocytes may become exhausted and there may be a failure to replenish the circulation. There are thus different kinds of leucopenia, but my experiments throw light on only two varieties—the leucopenia of marrow exhaustion, and the leucopenia which appears as an initial phenomenon when a dose of bacteria is introduced into the circulation. I will deal with the latter first, because it has more particularly engaged my attention.

THE PHENOMENON OF INITIAL LEUCOPENIA.

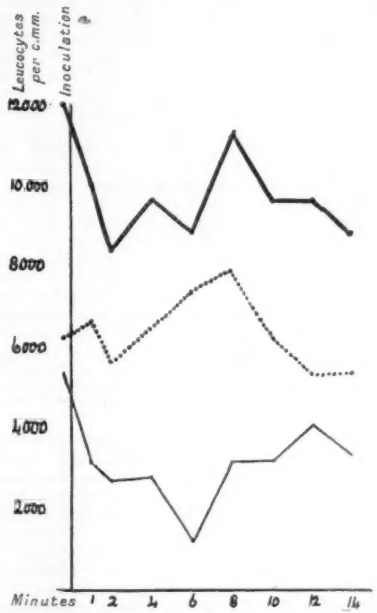
The importance of this remarkable form of leucopenia is in the main theoretical, for we have no opportunity of observing it in human infections; indeed, the conditions which evoke it can rarely occur in man. It has long been known that an experimental leucocytosis can be induced in animals by the injection of certain chemical substances, notably of certain organ-extracts, of albumose, and of bacterial proteins. It was found, on closer investigation, that this leucocytosis was preceded by a marked diminution in the circulating leucocytes; both the diminution and the subsequent increase were found mainly to concern the polynuclear leucocytes. Löwit, who was one of the first to describe this initial leucopenia, considered that the foreign substance introduced actually destroyed the leucocytes, and that it was the products of their dissolution which evoked the subsequent leucocytosis. Goldscheider and Jacob, and also Bruce, later showed that the decrease in the circulating leucocytes was not due to their destruction but to their accumulation in the capillaries of the internal organs, and especially of the lungs. I know of no important light which has been shed on the subject since the appearance of Bruce's and of Goldscheider and Jacob's papers in 1894.

I have closely examined the initial blood changes, after the intravenous injection of bacteria, on 30 or 40 occasions mostly by means of differential leucocyte counts. Frequently the counts have been made at intervals of only two or three minutes. The bacteria employed for the experiments have included staphylococcus aureus, streptococcus pyogenes, streptococcus fæcalis, micrococcus citreus agilis, the pneumococcus, bacillus coli communis, the typhoid bacillus, Gärtner's bacillus, the diphtheria bacillus, the tubercle bacillus, the anthrax bacillus, and bacillus fluorescens aureus. These various organisms have been injected both living and dead; the effect as regards the initial leucopenia seems the same in either case.

While I can confirm the general truth of the doctrine of initial leucopenia after the intravenous injection of bacteria, I have a good deal to add to the mere fact that leucopenia occurs.

Let me first describe a single case in detail. It is not easy to select from my numerous charts one that can be called "typical" because the details vary considerably in the case of different bacteria, and sometimes even in two rabbits injected with the same bacterium. I will take, however, the case of a normal rabbit not previously immunised and describe the sequence of events for a quarter of an hour after the intravenous injection of 1000 million living bovine tubercle bacilli. The changes were quite moderate in degree. (See Chart 1.) The initial count, just before the inoculation, showed 12,000 leucocytes per cubic millimetre of blood; of these 6240 were lymphocytes and 5340 were polynuclears. During the 15 minutes following the inoculation the lowest total count obtained was 8400 per cubic millimetre at the second minute and the highest 11,200 at the eighth minute. There was thus no very striking change in the total count. What truly happened was only revealed by the differential counts. These showed that the polynuclears fell to 3150 per cubic millimetre in one minute to 2646 in two minutes and to 1276 in six minutes, after which they rose again to 4032 at the twelfth minute. There was thus a marked transitory polynuclear leucopenia. More than three-quarters of the polynuclears vanished from the peripheral circulation in six minutes, though they soon reappeared. In

CHART 1.



Showing the changes in the circulating leucocytes for 14 minutes after the intravenous inoculation of a normal rabbit with 1,000,000,000 living tubercle bacilli. Thick line = Total leucocytes. Dotted line = Lymphocytes. Thin line = Polynuclears.

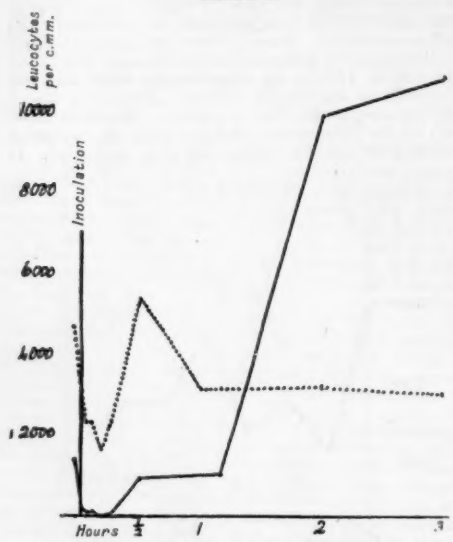
the total counts the fact was masked by an irregular rise in the lymphocytes, which reached 7896 per cubic millimetre at the eighth minute.

I have chosen this case to start with because it illustrates the fundamental fact of initial polynuclear leucopenia, though in a moderate degree, and because it shows the necessity for differential leucocyte counts if that fact is to be appreciated in its minor manifestations. Chart 2 is a much more extreme example of initial leucopenia. It shows the changes occurring after the intravenous injection—not of bacteria, but of sheep's corpuscles—in a rabbit which had already been immunised against these cells. In this instance the polynuclears actually vanished from the circulation at the tenth minute; in a count of 200 leucocytes lymphocytes were alone found. I now pass on to discuss the matter more fully.

In the first place, I find that the phenomenon of initial leucopenia is by no means equally marked after injections of differing bacteria. Some species excite it to a high degree and for several hours; others to a trivial extent and for a few minutes only. The group of bacteria in which I have found the property of exciting an initial leucopenia most highly developed is that including the typhoid bacillus and B. coli. The staphylococci and the diphtheria bacillus have

the power only feebly developed, nor under ordinary circumstances is it well marked in the streptococci, the pneumococcus, the tubercle bacillus, and the anthrax bacillus. I have never found initial leucopenia quite absent when the blood has been investigated every few minutes during the first quarter of an hour after an intravenous injection, but it may be trivial and transitory or intense and lasting.

CHART 2.



Showing an extreme initial polynuclear leucopenia following the intravenous inoculation of 3 cubic centimetres of a 5 per cent. suspension of sheep's corpuscles into a partially immunised rabbit. Dotted line=Lymphocytes. Continuous line=Polynuclears.

Thus in two animals inoculated for the first time with a dose of (100 million) B. coli communis vaccine, the polynuclear leucopenia lasted for four hours; in one the fall was from 3960 polynuclears per cubic millimetre before inoculation, to 700 at the third hour; in the other it was from 6400 before inoculation, to 1344 at the second hour. In both cases a polynuclear leucocytosis then supervened. In animals, on the contrary, inoculated for the first time with living and dead diphtheria bacilli, the leucopenia was trivial and soon over; less than one-fifth of the polynuclear leucocytes disappeared from the peripheral circulation, and in an hour the normal numbers were exceeded. It is clear, therefore, that the power of exciting a polynuclear leucopenia when injected into the circulation is one present in very varying degree in the case of different species of bacteria.

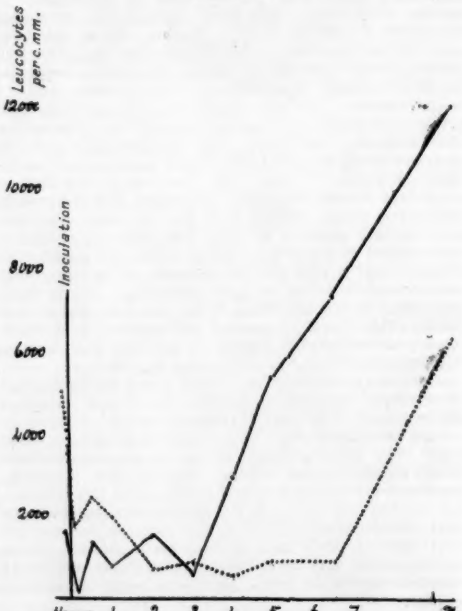
[I have generally given the dose of dead or living bacteria suspended in about 1 cubic centimetre of normal saline solution. I therefore thought it right to test the effect of administering a dose of 1 cubic centimetre of simple warm saline solution intravenously, by differential counts every few minutes upon the leucocytes. No result of any moment was observed beyond a slight polynuclear rise lasting for 30 minutes and broken by a trivial fall at the fifth minute.]

I may summarise the effects of the different species of bacteria tested so far as concerns the initial leucopenia produced when a *first dose* is intravenously administered to a rabbit which has not previously been immunised. In the case of the harmless *Micrococcus citreus agilis* I find the phenomenon substantially absent. In the case of *Staphylococcus pyogenes aureus*, *Streptococcus pyogenes*, and *Streptococcus fæcalis* it is absent or very slight. In the case of the *Pneumococcus* it is slight but occasionally distinct. With the *anthrax bacillus* it is trivial, and with the *diphtheria bacillus* almost absent. In the case of the *tubercle bacillus* I find the phenomenon moderate in degree and transient at the first inoculation. With *Bacillus coli* I have obtained variable results: in two rabbits I found only a slight initial leucopenia; in a second pair inoculated with a different vaccine the leucopenia was well marked and lasted for several hours. I have met with similar differences when living colon bacilli were administered intravenously. In all my experiments with the *typhoid bacillus* and *Gärtner's bacillus* the leucopenia has been marked and of some hours' duration.

The phenomenon is seen, even in the case of unimmunised animals, to vary in its extent and in its duration. The intensity and the duration commonly, but not invariably, go hand in hand. It is not always an absolutely initial phenomenon: I have more than once found it preceded by a very transitory rise in the polynuclear leucocytes—e.g., after the injection of staphylococcus aureus. With B. coli and B. fluorescens aureus I have seen it delayed till the second or third hour, but this is exceptional.

It is commonly held that initial leucopenia is exclusively an affair of the polynuclear leucocytes, and it is true that the fluctuations in these cells are usually more abrupt and noticeable than in the other types. I find, however, that the circulating lymphocytes undergo similar, though less abrupt, changes, and that the lymphocytic leucopenia may be more lasting than that affecting the polynuclears. A survey of nearly 40 graphic charts of differential leucocytic changes after the intravenous injection of living and dead bacteria enables me to state that a lymphocytic leucopenia is hardly ever absent. I find it least marked after first injections with the pyogenic cocci: here it is usually slight and of transient duration. In the case of diphtheria, tubercle, and anthrax it is more pronounced and may last some hours. It is most pronounced in the case of injections with members of the coli group. After injection of B. coli vaccine I have seen the lymphocytes fall from 3880 per cubic millimetre to 1220 at the third hour; after typhoid vaccine I have seen a fall from 5040 to 504 at the fourth hour; and after a Gärtner vaccine from 4760 to 324 at the fifth hour. These were the lowest points of a prolonged and gradually developing lymphocytic leucopenia

CHART 3.



Showing the behaviour of the circulating lymphocytes and polynuclears in a rabbit after the intravenous inoculation of a dose of typhoid vaccine (300,000,000). Dotted line=Lymphocytes. Continuous line=Polynuclears. There is seen a lymphocytic leucopenia, slower in onset, but more lasting than that affecting the polynuclears.

This is rarely so abrupt in onset as the corresponding polynuclear leucopenia; it may take several hours to reach its lowest point, and in the severer types seen after administration of the last-named group of bacilli it may continue

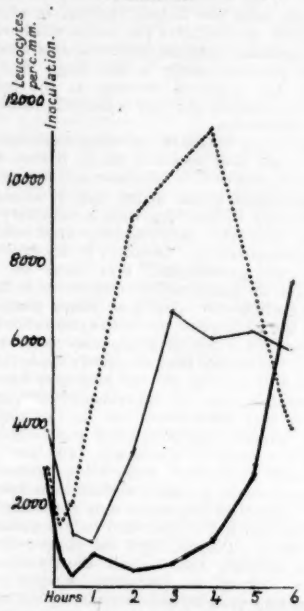
long after the polynuclear leucopenia has given place to a pronounced leucocytosis. When the lymphocytes again return to normal they may pass above their natural limits, so that the blood shows a temporary lymphocytosis which I have once seen very highly marked.

I shall not refer further to this lymphocytic leucopenia because I have been unable to trace its mechanism and am ignorant of its meaning. I must content myself with placing the facts on record, and pass on to consider a further and very important feature of initial leucopenia which concerns especially the polynuclear leucocytes. This lies in its relation to immunity.

INITIAL POLYNUCLEAR LEUCOPENIA AS AN IMMUNITY REACTION.

In my earlier work on the leucocytes I was occupied chiefly with the pyogenic cocci, after inoculation with which the phenomenon is relatively ill marked. On beginning to work with members of the B. coli group it at once began to obtrude itself on my attention. As, however, it commonly occurs with these bacilli in animals which have not been artificially immunised, its relation to immunity

CHART 4.



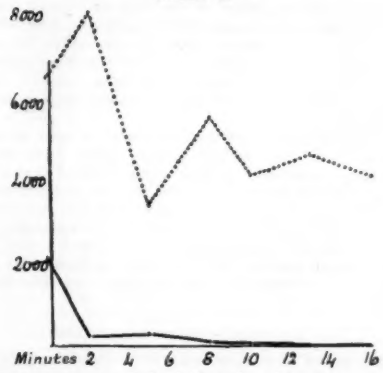
Showing the superposed curves of the circulating polynuclear leucocytes in the rabbit for six hours after three intravenous inoculations of killed tubercle bacilli in doses of from 100,000,000 to 200,000,000. The effect of the first inoculation is shown by the dotted line, that of the second by the thin line, and that of the fourth by the thick line. The duration of the polynuclear leucopenia is seen to increase with the progressing immunity. (Data for the third inoculation are lacking.)

did not at first strike me. This relation first became apparent in the course of experiments with the tubercle bacillus. I had administered to a rabbit successive intravenous doses of killed bovine tubercle bacilli (varying from 100 to 200 million), with intervals of about a month between the doses. I had prepared complete differential leucocyte charts on the occasions of the first, second, and fourth inoculations, and on comparing these I noticed a very remarkable progressive increase in the initial polynuclear leucopenia. On the first occasion this had lasted less than an hour and the lowest polynuclear count observed had been 1544 per cubic millimetre; on the second inoculation the polynuclears fell to 1118 at the end of one hour, but in two hours had nearly regained their initial figure. On the fourth occasion they fell to 224 per cubic millimetre in half an hour and were still very low (532 per cubic millimetre) at the third hour; they did not regain their initial number till between the fifth and sixth hours.[6]

I was convinced that there must be some relation between the increasing immunity of the animal and the more marked polynuclear leucopenia seen, and I began to consider other charts which I possessed from this point of view. In the case of animals vaccinated against members of the B. coli group I found that succeeding doses were more constantly associated with polynuclear leucopenia than the first dose, and that the leucopenia was more abrupt in onset and more extreme in degree. I found further that animals intravenously inoculated with the pyogenic cocci and with the diphtheria bacillus, which on their first injection showed only a trivial polynuclear leucopenia, might on subsequent injections show the phenomenon very distinctly.

I now instituted experiments to test the point and commenced to examine the blood at short intervals after inoculation, sometimes killing the animals, for a purpose I shall shortly describe, a quarter of an hour from the beginning of the experiment. I began with the tubercle bacillus. I took the animal mentioned above, which had been vaccinated five times, three weeks having elapsed since its fifth vaccination, together with a normal control animal which had not been treated in any way. Each animal received an intravenous dose of about 1000 million living bovine tubercle bacilli, and was killed after a quarter of an hour. The leucocytes were counted every two minutes, with the following result. In the case of the immune rabbit the polynuclears numbered 1562 per cubic millimetre before inoculation; in one minute they fell to 136 and in two minutes to 34 per cubic millimetre; after this they rose a little and numbered 432 per cubic millimetre before the animal was killed. In the case of the non-immune rabbit the polynuclears numbered 5340 per cubic millimetre: they fell to 1276 at the sixth minute, but this was the lowest figure seen; in 12 minutes they had risen again to over 4000. There was thus a most striking difference between the immune and the non-immune animal.

CHART 5.



Showing the curves of circulating polynuclears in a normal and in an immune rabbit respectively for sixteen minutes after the intravenous inoculation of 1,000,000 virulent pneumococci. Dotted line=Normal rabbit. Continuous line=Immune rabbit.

In an experiment with the pneumococcus the difference was even more remarkable. I possessed a rabbit which had survived a dangerous pneumococcal septicæmia, and which had later been inoculated with living attenuated pneumococci; 18 days had elapsed since the last infection. I took this rabbit, together with a normal untreated animal as a control, and I injected intravenously into each 1000 million living, virulent, capsuled pneumococci from cultures made the day before from a case of human pneumococcal septicæmia. Both animals were killed after 16 minutes. The effects upon the circulating polynuclears were as follows. The immune animal had 2160 per cubic millimetre

[6] A fifth inoculation yielded a somewhat discordant result; there was a more abrupt polynuclear fall than on any previous occasion, for they fell in five minutes to 264 per cubic millimetre, but the leucopenia was not maintained so long as on the fourth occasion—indeed, in two hours the number had surpassed the initial figure.

before the inoculation; in two minutes they had fallen to 264; they had risen slightly in five minutes, but at the eighth minute they were only 56 per cubic millimetre, and this number fell to 10 per cubic millimetre at the sixteenth minute; the polynuclear cells were practically wiped out of the circulation. In the non-immune animal the result was very different; its initial polynuclear count was 6596 per cubic millimetre; this had risen in two minutes to 8136, but in five minutes was only 3480 per cubic millimetre, the lowest number observed. Thenceforward the counts were between 4000 and 6000.

With streptococcus fæcalis the results were less extreme. In this experiment I used a rabbit which had received three intravenous doses of vaccine, the last 23 days previously. No normal control animal was tested on this occasion. A does of 1000 million living streptococci was given intravenously and the animal was killed after 15 minutes. The polynuclear leucocytes numbered 2990 per cubic millimetre before the injection; in two minutes they had fallen to 504, but they began to recover at the eighth minute, and in 14 minutes they exceeded the initial number.

I carried out a similar experiment with micrococcus citreus agilis upon an animal twice immunised with living cultures of this organism, but no noteworthy leucopenia was induced. The polynuclear count was 2920 per cubic millimetre before inoculation, and the lowest subsequent count was 1888 at the eighth minute; after this the counts were above normal.

I shall have later to mention experiments with typhoid immune rabbits in which the polynuclear leucopenia was rapid in onset, extreme in degree, and of long duration, but I need hardly labour the point further. It is clear that there is a relation between the degree of immunity and the intensity and abruptness of the polynuclear leucopenia induced by an intravenous injection of the homologous bacterium. In other words, we may describe the initial polynuclear leucopenia as an immunity reaction. I cannot claim to be the first to recognise this. While I was engaged in these experiments and had already arrived at the above conclusion, I came across a reference to observations by Sacerdotti, published in 1907. He had immunised rabbits against the blood-platelets of the dog and found that these platelets produced an extreme but transient leucopenia when injected into the immune animal, whereas in the normal rabbit they caused so such effect. He therefore put forward the phenomenon as an immunity reaction, and his observations encouraged me to pursue the matter further, as I shall presently describe.

It may be objected that the leucopenia is seen in animals which are not immune—or rather which have not been artificially immunised. I have already stated that this may be so, in marked degree, with the B. coli group of bacteria. But it does not follow that because one has not intentionally immunised an animal it is destitute of immunity: some degree of natural immunity is often seen and it may well be better marked against some bacterial species than against others. The question is a much larger one than this, as I hope soon to show.

THE MECHANISM OF THE LEUCOPENIA.

In a marked case nine-tenths or more of the polynuclear leucocytes may disappear from the peripheral circulation within a minute or two of the bacterial injection. Nor is this all, for a considerable number of the lymphocytes usually vanish also at the same time. Where the latter go to I do not know, but with regard to the polynuclears I can most fully endorse the results of Goldscheider and Jacob and of Bruce. They are held up in the lung, screened off, as it were, by the pulmonary capillaries.

I have already described the method by which I have endeavoured to measure the number of polynuclear cells in unit volume of given tissue; in two normal rabbits, suddenly killed, I found them to number respectively 12,000 and 20,000 per cubic millimetre of lung. In no other organ (except the bone marrow and spleen pulp) are these numbers approached. The accumulation of the polynuclears in the lung after a bacterial injection appears to be an exaggeration of a natural physiological process.

I have examined the lungs and other organs of seven rabbits killed while in the leucopenic condition—mostly about a quarter of an hour after the bacterial injection. Where the leucopenia has been pronounced the number of polynuclears in the lung is very much increased. Thus, in a rabbit immunised against streptococcus fæcalis and killed a quarter of an hour after a large dose of the living organism I found 51,000 polynuclears per cubic millimetre of lung tissue. In a coli-immune animal dying two hours after a moderate injection of vaccine, with a circulating polynuclear count of only 205 per cubic millimetre, there were 60,000 polynuclears per cubic millimetre of lung. But in an animal killed 15 minutes after the injection of micrococcus citreus agilis, and which showed hardly any circulating leucopenia, the lung figures were normal—viz., 11,000 per cubic millimetre.

The relation of the phenomenon to immunity is shown by two pairs of animals. I have already described the early circulatory changes in the immune and non-immune rabbit, after the intravenous injection of very large doses of the tubercle bacillus and of the pneumococcus, and have shown the much more intense leucopenia in the immunised animal. In all cases the animals were killed in about a quarter of an hour. In the case of the tubercle bacillus, the immune animal showed 57,000 polynuclears per cubic millimetre of lung, the non-immune only 35,000. With the pneumococcus the corresponding figures were 72,000 and 41,000.

No such increase was found in any organ except the lung. The figures for the spleen, liver, and kidney did not exceed those found in the normal animals (except in the case of the animal dying after the B. coli vaccine, in which the liver showed 13,000 polynuclears per cubic millimetre). I feel justified in asserting that the polynuclears are held up, to all intents and purposes, solely in the lung. And calculation shows that the observed increase in the lung tissue is sufficient to account for the observed decrease in the peripheral circulation.

It may naturally be asked by what mechanism the polynuclear cells are thus screened off, as it were, in the lung. I do not know, just as I do not know why the process occurs to no inconsiderable extent in the normal animal. It looks as if the sojourn in the lung were a voluntary one on the part of the leucocytes, fulfilling some need which they feel, possibly for oxygenation. Levaditi, in his experiments with cholera immune guinea-pigs,[7] lays stress on the phagocytosis seen in the leucocytic accumulations in the lung. At first I was inclined to think that where phagocytosis had occurred in the circulation the leucocytes retired to the lung to digest their prey, just as a dog may retire under a sofa with a bone. It is true that in certain cases the leucocytes which have accumulated in the lung may be seen full of ingested bacteria; in my experiment with streptococcus fæcalis this was noticeable, but in a similar experiment with virulent pneumococci I could find no phagocytosis in the lung or elsewhere. In the case of an immune rabbit inoculated with living tubercle bacilli I made smears from the lung and stained them for the tubercle bacillus. Polynuclear leucocytes were abundant in the films, but out of 400 which I enumerated only 5 contained bacilli (1·25 per cent.). Clearly, then, the phagocytic theory will not explain matters, and I shall shortly show that the phenomenon occurs in immunity against unorganised antigens, putting phagocytosis completely out of court. A possible explanation, though a somewhat speculative one, lies in the suggestion that in the circulatory reaction between antigen and antibody, complement is used up and that, assuming an origin of complement from the polynuclear leucocytes, these cells need a free supply of oxygen to recuperate their powers.

In some cases the initial leucopenia may be transient; in other cases it may endure for four or five hours or more. There then ensues, in most cases, a polynuclear leucocytosis. Watching the blood from hour to hour one finds the polynuclears slowly regaining the normal and then more quickly rising high above it. The question of leucocytosis I must defer till another lecture, but it is relevant here to ask whether, as the leucopenia is passing off, the returning polynuclears are those which had for the time being retired into the lung, or whether they are a new supply derived from the bone marrow. I have no sufficient data for answering the question, but in a case of severe and protracted leucopenia in a typhoid-immune rabbit which had received a large intravenous dose of living typhoid bacilli I noted in the blood about the fourth and fifth hours, as the leucopenia began to pass off, considerable numbers of nucleated red

[7] Annales de l'Institut Pasteur, vol. xv., p. 894.

corpuscles (normoblasts) and a few myelocytes. This suggests an over-activity of the marrow.

THE CONSTITUTIONAL SYMPTOMS ASSOCIATED WITH INITIAL LEUCOPENIA.

So long as I was working with the pyogenic cocci, which do not cause much leucopenia except in the highly immune animal, I did not notice any marked constitutional symptoms after the intravenous injection of bacterial vaccines. The rabbits were at times quiet for an hour or two after an injection, but they were not manifestly ill. When, however, I began to experiment with vaccines prepared from the B. coli group, I speedily met with symptoms of marked illness after the injection. The animals were not merely quiet; there was sometimes much respiratory distress, the symptoms coming on in from 30 minutes to an hour or so after the inoculation. In a marked case the animal lay down with its limbs extended, and the respirations rose in frequency to 60 or 80 per minute. (The respiration frequency in a normal rabbit at rest is about 30 per minute.) I soon noticed that these symptoms bore some relation to the leucopenia; they were marked in proportion to its intensity, and as the leucopenia passed off and leucocytosis set in the animal would recover its liveliness and begin to eat again. During the height of the leucopenia it was often difficult to obtain a flow of blood from a punctured vein; it is easy in the natural animal to induce a vascular dilatation, during which blood flows readily from the smallest prick, but in a leucopenic rabbit it may be difficult to induce this vaso-dilatation.

My attention was at last very decisively aroused by the occurrence of actual death in an immune animal, following a not immoderate dose of B. coli vaccine. I had two rabbits which had been three times immunised with doses of 100 million killed B. coli communis at intervals of about a fortnight. They had then been left for three months without treatment. Fearing lest their immunity should fade, I gave each a double dose—200 million of the same vaccine, which had been standing in the laboratory for some months. All the injections were intravenous. An hour after the injection I noticed that one of the rabbits was lying down and breathing rapidly, while the other showed similar symptoms in lesser degree. In an hour and three-quarters the first animal had a respiration frequency of 130, and in two hours of 150 per minute. Suddenly it became convulsed and died in less than a minute. Just before death its total leucocyte count was 1000 per cubic millimetre, of which 205 were polynuclears. The fellow animal, though ill, recovered. I may add that I have repeatedly administered doses of 200 million killed B. coli intravenously without serious symptoms, but never before in an immune animal after so long an interval as three months.

Now the symptoms I have described in initial leucopenia in rabbits and the mode of death in the single animal which died are the symptoms associated with the condition known as "*anaphylactic shock*." Increased frequency of respiration is the most obvious symptom of the anaphylactic animal after the injection of a second dose of antigen. It is known that anaphylaxis can be induced by bacterial proteins, and notably with those of the B. coli group. I do not doubt that the phenomena seen in the leucopenic rabbit after the injection of living or dead bacteria are the phenomena of anaphylactic shock. I have come to the conclusion that the initial leucopenia seen after intravenous injection of bacteria and bacterial vaccines, especially in the immunised animal, is intimately bound up with anaphylactic shock, and is an integral part of this condition. To substantiate this opinion I must offer a few remarks on anaphylaxis.

THE RELATION OF LEUCOPENIA TO ANAPHYLAXIS.

By the term "anaphylaxis" is meant a condition of induced super-sensitisation to an alien protein. The protein may be harmless to a normal animal, but in the sensitised animal even a moderate dose causes severe symptoms and sometimes death. The term anaphylaxis was coined by Richet in connexion with his observations on a protein derived from the sea anemone, and against which he sensitised dogs. For awhile the phenomenon remained a mere curiosity, but renewed attention was drawn to it by the observation of Arthus in 1903, that although normal horse serum was harmless to the rabbit, highly toxic symptoms occurred if the animal had previously been several times injected with this substance, provided that a sufficient interval had elapsed since the last injection. It was later shown that a single previous injection sufficed to sensitise the animal. The practice of employing guinea-pigs for standardising diphtheria antitoxin led to a rediscovery of the phenomenon here also, and Theobald Smith in America drew attention to the frequently fatal results which followed second injections of serum. Inasmuch as horse serum is now extensively used in the treatment of human disease, the matter was soon seen to be of considerable importance, for it became apparent that there was some connexion between anaphylaxis and the so-called "serum disease" in man. The subject has now been attentively studied by numerous observers, and though no complete explanation is yet forthcoming, it is possible to make certain general statements about the condition.

It would seem that an animal can be supersensitised against any alien protein or allied substance capable of acting as an antigen—that is, of evoking the formation of an antibody. The anaphylactic condition is closely associated with the development of the antibody; after the primary sensitising injection an incubation period of two or three weeks is required before the supersensitisation is fully established, and this period coincides fairly with that known to be requisite for the formation of an antibody, but is rather longer. The reason seems to be that something more than the formation of antibody is required; before the animal is fully sensitised the antigen must also have disappeared from the body. When this condition is reached and antibody alone is present (a state of affairs which may last for many months) the introduction of a new dose of antigen, especially if it be injected directly into the circulation, leads to a violent disturbance of the system, the so-called "anaphylactic shock," in which the animal may die. Should it survive it is found to be for the time desensitised and is said to be in a condition of "anti-anaphylaxis"; a further injection of antigen causes no such systemic storm. Anaphylaxis may in time return or may be reinduced by suitable injections of antigen.

It must be noted that in order to induce the condition of supersensitisation the antigen must be administered by way of the circulation, the peritoneum, or the subcutaneous tissue, not by the alimentary canal. Although some have claimed to obtain anaphylaxis by feeding, the great majority of observers have failed to get any results in this way.

The symptoms which follow the introduction of a second dose of antigen into the anaphylactic animal vary somewhat with the species. The most obvious clinical symptoms are usually respiratory; the animal is restless and begins to breathe quickly; the respirations may be enormously accelerated. The heart's action is feeble and it has been shown that there is an extreme fall in blood pressure. The temperature falls and urine and fæces may be passed involuntarily. In a fatal case convulsions end the scene. The clinical picture is that of "shock" in an extreme degree. Post-mortem examination reveals nothing to account for death. Local hæmorrhages have sometimes been found, but there is no visible organic lesion sufficient to explain the symptoms. If the animal does not die it recovers from its apparently dangerous condition with the most remarkable rapidity.

Besredka, who has largely employed the intracerebral method of injection for administering the second dose of antigen (in which an extremely small dose suffices to produce a fatal result), has found that if an anaphylactic guinea-pig be deeply narcotised with ether the desensitisation can be carried out without harm to the animal.

I do not propose to enter here into the highly speculative theories which have been put forward to explain the remarkable facts that I have mentioned. The phenomena bear a striking resemblance to those which have long been known to ensue when peptone is intravenously administered, and it may be that the matter is bound up with the functions of the intestinal wall or portal area in defending the body against the toxic effects of the initial products of proteid digestion. It is stated that the phenomena seen when a dose of antigen is administered to a supersensitised animal are associated with a disappearance of complement from the serum. If this be so, and if complement is derived from the leucocytes, we may obtain some inkling of the reason for the participation of the polynuclear cells in the events of the anaphylactic shock. In any case it may confidently be

asserted that the phenomenon of anaphylaxis is closely bound up with that of specific immunity.

It has been known for some years that bacterial proteins are capable of setting up anaphylaxis (Wolff-Eisner, 1904). The subject has been carefully studied by Rosenau and Anderson in America and by Kraus and Doerr in Austria. The most striking results have been obtained with bacteria of the B. coli group (including the bacilli of typhoid and dysentery), and with the cholera vibrio and allied organisms; the bacterial proteins have been prepared by autolysis with weak caustic soda, or by alternate freezing and thawing. Definite results have also been obtained with tubercle and anthrax bacilli, and even with species which are not pathogenic—such as the hay bacillus. It seems to be the alien protein, rather than the toxin present, which evokes the supersensitisation—indeed, Kraus and Doerr found that in guinea-pigs sensitised against dysentery bacilli only the bacillary bodies were able to induce anaphylactic shock; the germ-free toxin produced no effect. Nevertheless, hypersusceptibility to true bacterial toxins, such as that of the diphtheria bacillus, is known to exist—witness the observations of von Behring and Kitashima on horses in course of immunisation. Whether this latter phenomenon is identical with that of anaphylaxis against alien protein is not yet settled.

It must be noted that there is such a thing as *natural anaphylaxis*, as opposed to the artificially induced condition. It is held by many that the idiosyncrasies of some persons against certain food-stuffs—crab, mussels, &c.—are an example of this. And there is no difficulty in believing that anaphylaxis may naturally exist against certain bacteria, inasmuch as the serum of some individuals or species is known to contain antibodies capable of destroying some sorts of bacteria. Such natural anaphylaxis may well be in truth a post-natal acquirement: if the intestinal bacteria tend to invade healthy tissues so frequently as we must now believe, a sort of continuous auto-vaccination on a small scale will serve to explain the presence of antibodies and inferentially of anaphylaxis.

THE PELVIC CONDITIONS RESULTING FROM THE SLIGHTER FORMS OF PUERPERAL SEPSIS AND THEIR TREATMENT.[1]

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THE subject to which I wish to call attention is perhaps best illustrated in the out-patient departments of our gynæcological hospitals, and the most striking cases are those of "one-child sterility." The patients belong for the most part to the class who even yet receive the least possible attention during labour and the lying-in state, and who most patiently endure the discomforts and ailments which can ultimately be traced directly to parturition and the puerperium.

The category of cases with which I wish to deal contains those which are in the puerperium not diagnosed as abnormal, or are even in the ordinary course of medical practice not definitely diagnosable. The term "morbidity," which we have accepted with a certain degree of levity and with entire confidence that we comprehend its causes and its consequences, is responsible for a large proportion of the chronic invalids who so patiently endure the travesty on gynæcological practice which characterises so much of our out-patient work. Much harm may be done in the female pelvis with the temperature under 100·4° F., and without a quickening of the pulse sufficient to attract the attention of the midwife, or even of the busy general practitioner.

Why are these cases not diagnosed?—1. The ordinary midwife makes no exact observations. She is incapable of doing such a thing. The number of the *bonâ-fide* type of persons practising midwifery who cannot read a clinical thermometer is astonishing and deplorable, and this seven years after the rules drawn up by the Central Midwives Board have come into force.

2. Our "monthly nurses" belong largely to the same uneducated class. They miss slighter symptoms and consequently at the daily visit give the practitioner an unduly favourable report of the patient's condition. It is so much pleasanter and easier to do so.

3. The most careful and experienced medical practitioner with an apparently normal case visits only once a day and that in the forenoon. The pulse and temperature are then at their best, and if the pulse is quickened in some measure the acceleration is attributed to excitement due to the doctor's visit. It is natural for the medical attendant to assume that when everything known to obstetric science has been done for the welfare of the patient the puerperium will be normal unless observations are made to the contrary. We know, of course, from painful experience that absolute asepsis of the genital organs is as yet impossible of attainment in private practice, especially among the working classes, but with our well-founded belief in cleanliness and non-interference with practice in conformity we obtain very good results upon the whole. Fortunately, an encyclopædic knowledge of bacteriology is not so generally diffused among practitioners as to paralyse their efforts at prophylaxis and treatment, as has been the case to such a large extent in some regions of the continent, especially in Germany.

In contrast with private practice it is alleged that "morbidity" is almost unknown in some of our lying-in hospitals. Their statistics should be exactly inquired into with some salutary scepticism. For the sake of peace I shall not compare British lying-in hospitals in this respect, but if for illustration we look at reports of a series of German Obstetric Kliniks we are at once struck with the extraordinary range between the maximum and minimum of morbidity. The differences appear to depend, not upon facts, but upon interpretation of terms, and also largely upon the temperament of the director of the hospital.

In the class of case in British practice to which I am seeking to attract attention, neither pulse nor temperature observed by the nurse may amount to "morbidity" in any sense yet generally accepted. The case is ultimately diagnosed by the remote effects of certain pathological processes.

What, then, are the symptoms which might be observed by the exercise of great care?

Never a rigor. Rigor always implies sepsis of the graver degree. We can exclude all the forms and degrees of sepsis to which we attach the name of "puerperal fever," a good old term which has a prescriptive right to survive. In the severer cases, still within the category which forms my subject, probably on careful enquiry it would be found that a certain sense of chilliness would be mentioned by the patient. In my experience, however, this is one of the important symptoms that are almost always glibly explained away by the nurse, and receive vastly too little attention.

We have fallen into an evil custom of manufacturing new terms not based on new knowledge, and reputations are being built up on the use of the Greek dictionary, as in the middle of last century. There have been a vast amount of experience and much controversy throughout the generations, but no noteworthy new knowledge has been added to obstetric science and practice since the middle of the eighteenth century. We can only except the evangel of Semmelweis, explained by the work of Pasteur, and practically applied to surgery by its apostle Lister. Keeping this in mind it will be seen that my subject occupies a distinct place in the new knowledge as dealing with the slighter forms of *lymphatic sepsis*. It excludes *a fortiori* the pyæmic form which is always grave even in its slighter manifestations, and the mixed hæmic and lymphatic form which shows itself more or less tardily in a comparatively light attack of *phlegmasia alba dolens*.

Among the new terms bandied about without clearness of thought, and consequently without recognition of their essential identity, are "sapræmia" and "septicæmia"—they are responsible for many a disaster.

If we now analyse the positive signs and symptoms in the cases under consideration we find invariably with exact and painstaking investigation: (*a*) accelerated pulse-rate, when it should be very slow; and (*b*) slight and not evanescent rise of temperature at some period within the 24 hours, usually in the early part of the evening, when it should be

[1] A paper read on June 9th, 1910, at a meeting of the Obstetrical Section of the Royal Society of Medicine.

subnormal. This altogether apart from the physiological maximum in persons who live regular and peaceful lives. For observations on these finer points the medical man must depend upon a well-trained conscientious nurse who is able and willing to keep full nursing notes, showing the exact temperature every four hours during the day. When the notes are a correct record the medical attendant will see at a glance during his daily visit whether there is any abnormality, and he will take measures accordingly. If the doctor belongs to the type of easy-goers who can be satisfied with the monthly nurse's explanation that the baby was fractious, that the husband was not very kind, or that the breasts were just a bit too full, then so much the worse for the patient.

Is pain a symptom? There is none which may not be, and usually is, mistaken for some incidental and entirely fortuitous discomfort—the expression of pain depends so largely upon the patient's up-bringing and temperament. Upon the whole, among the humbler class of patients there is an expectation of great tribulation in the first labour and child-bed, and the fear of being thought "soft" produces a tendency to minimise symptoms which ought to receive close medical attention. In any case a slight pain is a late symptom in the class of cases which we are considering, and it can be elicited only by special manipulations according to the pathological type to which the particular case belongs: bimanual examination in slight endometritis with metritis, because the uterus is more or less sensitive to touch; deep lateral external pressure when there is a suspicion of slight perimetritis.

Is there a foul-smelling lochial discharge? Frequently. The association of foul lochia and slight rise of temperature always implies the possibility of immediate danger, and it is characteristic of the only class which calls for manipulative treatment without delay.

But, says an objector: "It is only a slight attack of sapræmia; it is not septicæmia." That is a very modern and entirely unproved, even unfounded, distinction. If you analyse and appraise the flux of verbal propositions which compose such a large part of the chapters on the pathology of the puerperium in so many of our text-books, you will find no clear exposition of a difference between sapræmia and septicæmia which can be properly grasped and effectively applied by the general practitioner. We are assured that the cases differentiate themselves in a few days; but a few days may make all the difference between satisfactory recovery and ruined health. No question of puerperal *mortality* arises here.

I have my doubts as to "wait and see" being a satisfactory principle for application either to the practice of midwifery or of politics. Foul-smelling discharge in child-bed demands prompt and active interference for the removal of the cause, some retained product of conception, not mere concealment of the odour by an antiseptic douche.

Now what are the *pathological processes* going on under our eyes, unobserved or under-valued, their import and possibilities seldom or ever exciting the interest of even the medical attendant? The process is a matter of *degree*, not of *kind*. It may be (1) septic endometritis with metritis; (2) perimetritis strictly localised in addition to the endometritis; (3) Parametritis owing to lacerations to such a slight extent as only to show its previous existence remotely by cicatrices and changes in the cervical mucosa.

It is not my intention to inflict upon you more than the average amount of platitude on prophylaxis, diagnosis, and treatment.

Prophylaxis is the application of all the practical knowledge we possess for the preventing of septic conditions in child-bed. The greater includes the less. The medical practitioner does not allow his patients to suffer because of ignorance or apathy on his part. It may be admitted that he is often not so long-suffering as he ought to be, and that he readily conceives conscientious reasons for harmful interference. Then at the present transition stage he is frequently ill served by half-trained self-satisfied persons who have obtained a little superficial instruction in "monthly" nursing alone. So prevention is deplorably and exasperatingly difficult.

As to *diagnosis* in such cases it is possible to be too conscientious in the employment of manual methods. Presumptive diagnosis with watchfulness are usually best for this class of patient.

The time for *treatment*, except in the more marked cases still within the category which we are discussing, has not yet arrived. The object of treatment is to prevent or minimise the consequences of the pathological processes, and the time for active interference is comparatively remote.

Let us return in more detail to the pathological processes.

I. *Endometritis with metritis.*—As soon as the endometrium becomes infected the process of involution of the uterus is arrested. This is a fact which does not appear to receive the attention which it deserves. In the severer cases of septic infection which call urgently for treatment because of symptoms implying danger to the life of the patient we often find, when we proceed to active treatment at the end of the first week of the puerperium, or even later, that the curette with a graduated stem will pass in for 6 to 8½ inches before it reaches the fundus uteri, and yet we are advised by some authorities to explore and clear out the cavity with our fingers! What digits they must be endowed with who can accomplish such a feat! This arrest of involution is the chief cause of the pelvic condition observed remotely even in the slighter degrees of sepsis.

In the typical case the patient leaves her bed at the time usual with the social class to which she belongs, and if she does not feel very robust some of the numerous minimising explanations are found by neighbours or nurse, and accepted as sufficient. Sooner or later certain symptoms arise—the remote symptoms of the pelvic condition which must in the long run receive attention even from the most apathetic or patient of women. These symptoms are produced by conditions resulting primarily from sub-involution. They are usually a sense of weight or dragging.

On physical examination, say six months or more after the confinement, some displacement of the uterus will be discovered. The usual displacements are downward or backward or both combined. If the examination has been delayed until the retroflexion has become chronic it will be found that there is thickening with erosion of the posterior lip. If this condition is discovered it considerably affects the prognosis as to cure by manipulations and pessaries. I have heard this anatomical change attributed to a local sepsis and curettage recommended for its cure. This is, in my humble opinion, mere imbecility as pathology, and the coarsest and most irrational abuse of the curette, even in an epoch when curettage is the most prominent and discreditable abuse in gynæcological practice. I can remember a time when the guiding principle with many was: "If in doubt, introduce a pessary." Nowadays the principle appears to be, "If you do not know what is the matter, employ the curette."

If in a case of backward displacement of a sub-involution uterus the ovaries are dragged off their shelves—out of their fossettes—then cure without operation is one of our rarest experiences. Even in cases of uncomplicated retroversion or flexion cure by manipulation and pessary is by no means common. One recent German writer puts the proportion of cure in cases observed for from 1 to 17 years as 7 to 10 per cent. The largest proportion of cures amounts to 20 per cent., according to August Martin and Fehling. What becomes of the remaining 80 to 90 per cent.? They are condemned to "palliative" proceedings as a rule, and remain more or less under medical observation and treatment for the rest of their natural lives. This is the simple statement of a sad fact which is perhaps not as a rule faced frankly and courageously by medical practitioners.

During the child-bearing time of life sterility is by no means a consequence of these backward displacements without apparent cause. Impregnation, early symptoms of pregnancy, then abortion, is the usual cycle, occasionally varied by spontaneous rectification or retroflexion with incarceration of the gravid uterus.

II. *Perimetritis.*—When the sepsis in the slightest unobserved degree is conveyed by the lymphatics through the uterine wall or along the tubes the result is peritonitis—the circumscribed peritonitis which we designate perimetritis. Even the very slightest peritonitis is followed as direct effect by some measure of adhesion; involution has been arrested or retarded early; the uterus is therefore large and heavy at the patient's getting up, and all the anatomical conditions favour the occurrence of complicated backward displacement. Whether tubes and ovaries become displaced or not they at once take on certain processes of change which lead to important consequences. The tubes sooner or later have the fimbriated ends retracted and closed, or they

become adherent to the ovaries. The ovaries gradually undergo pathological changes which may produce no specific and individual symptoms, but are fraught with important consequences. The tunica albuginea becomes thickened and sclerosed, so that the Graafian follicles cannot rupture externally and shed their ova, but they must rupture within the ovarian stroma, producing at first small cysts containing blood instead of forming corpora lutea. If such ovaries are not displaced they become adherent in their fossettes, clothed in the organising peritonitic exudation which slowly but certainly contracts, doing still further injury to the ovary.

This process of organisation of exudation and adhesions is by no means rapid, and for perhaps a year or so the bands are readily torn down. Later, the adhesions may become as completely organised and injurious as those that result from puerperal perimetritis, obvious from the first because of the severity of the symptoms. They are separable only by cautious prolonged manipulation, and they sometimes require the use of scissors.

Treatment.

1. *Sub-involution with displacement.*—The routine method of treatment has for its objects to diminish the congestion and bulk of the uterus and to restore it to its normal position. These objects may be occasionally attained by medicated glycerine tampons and manipulations. The "medicated" is not essential; it is the glycerine which has the depleting effect. My favourite tampon consists of a long shred of lint like a bandage with two inches or so of the end soaked in glycerine. When introduced it depletes and acts mechanically as a pessary. The most useless of all tampons is the pledget of absorbent cotton which the patient is directed to apply herself. These methods are all purely palliative and temporary in their effects.

The final resort is, as a rule, to the pessary, and the result is far from generally satisfactory. In simple hypertrophy with backward displacement the relief conferred may satisfy the patient and the medical man, but in the great majority of cases we condemn a young and otherwise healthy woman to discomfort and medical supervision for the rest of her life, for the menopause usually brings exacerbation.

In retroflexion complicated with prolapse of the ovary nothing but harm can come from pessary treatment. It is astonishing how frequently the displacement of an ovary is overlooked in general practice, just as the complication of retroflexion with adhesions is not diagnosed in another category of cases, and the pessary treatment is persevered with in spite of the suffering resulting from pressure on sensitive parts.

In the long run, in most cases some sort of operation must be the last resort. In most of the old-standing cases which we meet with there is a history of curettage once at least. The theory, if any, at the foundation of this practice may be that once septic always septic, as may be seen seriously alleged by a contributor to a German gynæcological journal a few years ago. This, on the analogy of Noeggerath's original doctrine that once infected with gonorrhœa always gonorrhœic.

I would suggest a method of treatment of the endometritis more gentle, as efficient, and without some of the serious objections to the curette, such as producing a wound which ultimately becomes a cicatrix.

The uterine canal is cautiously dilated by means of a suitable laminaria tent, and a wick of gauze soaked in a solution of chloride of zinc is introduced up to the fundus, care being taken to neutralise the excess of the escharotic fluid. This application destroys a pellicle of the endometrium in a perfectly smooth, symmetrical manner. The hypertrophy of the uterus is best reduced when there is some laceration of the cervix by an exaggerated Emmet operation with the apex of the wound on each side reaching so high as to divide some branch of the uterine artery. Failing success of these minor measures posterior colporrhaphy may be tried, here also by a rather exaggerated operation to make allowance for future shrinking, but after an apparently successful operation of this kind a pessary will have to be worn if the tendency to prolapse has been at all marked.

Among the operations suitable for uncomplicated prolapse with retroflexion is, I need hardly say, Alexander's operation of shortening the round ligaments. There is a distinct field of usefulness for the original operation which it must be conceded has a tendency to diminish in area. It fails to stand the test of pregnancy and parturition in 20 per cent. of all cases.

2. *Pelvic peritonitis with displacement.*—By far the most interesting portion of the class of pelvic diseases concerning the origin of which we can obtain no clear evidence from the patient is that of complicated uterine and ovarian displacement, of which the cause, or some part of the cause, is pelvic peritonitis or perimetritis. It is, as I have said, a question of degree. Instead of a statement in general terms, an illustrative case will perhaps more clearly indicate the features of such a category. Such illustrative cases are by no means difficult to find. Here, e.g., is a typical case of one-child sterility, from the practice of a man of wide experience and sound judgment in one of our most important Lancashire towns.

CASE 1.—A married woman was admitted to the Manchester Southern Hospital in October, 1899. The patient was 28 years of age; she had been married nine years and had one child born eight years ago. The labour was apparently normal and required no interference whatever. The patient got up at the end of 12 days apparently well. She did not try to suckle the infant. In the course of a year or so she began to complain of certain discomforts, and Dr. ——, after the usual examination, tried to replace the uterus, which he found retroflexed, by means of a pessary. This method was not successful, and the patient had been ailing to a slight extent ever since. There was no menstrual derangement, except within the last year or two the menstrual flow had gradually become more profuse and prolonged. It now continued seven days. At the hospital the case was diagnosed as retroflexion with adhesions. The patient was kept in bed for three weeks for treatment by douching and glycerine tampons without appreciable benefit, so after due consideration by all interested the operation of ventrofixation was performed. The uterus was found to be bound down by firm, but not extensive, adhesions. These were dealt with in the usual way and the operation was completed. The patient was kept in bed for five weeks after the operation, although there was no incident to suggest special caution, and she went home perfectly well.

Let us supplement this case with another in which the adhesions resulting from perimetritis were not allowed time to become firmly organised. It also illustrates the futility of some of our methods of treatment in complicated backward displacements, such as the Schultze process.

CASE 2.—The patient was a married woman, aged 28 years, with a history of some slight illness after miscarriage during the first year of marriage. When admitted to the Manchester Southern Hospital in October, 1891, she was found to have retroflexion with adhesion of the uterus. The ovaries were not displaced as far as could be made out by ordinary examination. The employment of douching, tampons, and the Schultze manipulations failed to rectify the position of the uterus. The operation of ventrofixation was performed in October, 1891. The uterus was found to be adherent to the pelvic floor; the broad ligaments were folded back but the ovaries were not dragged from their fossettes to which they adhered. The adhesions were broken down readily, some hæmorrhage coming from the torn adhesions. Ventrofixation was completed in the usual way and a smooth recovery resulted. The patient had a normal pregnancy, labour, and puerperium in the following year.

Now as such cases could be multiplied indefinitely from the notes of the last 20 years, and the practical conclusions from these two early cases are obvious, I forbear from the tedious process of further story-telling. I do not propose to analyse and criticise the vast number of ingenious methods of treatment, mostly surgical, which have been proposed and adopted more or less in Europe and America; I should only like to state my own conclusions that all these fancy operations have failed with the exception of those which enable the operator to inspect the field of operation. Incomparably the best of these operations for backward displacement of the uterus with adhesions or abnormalities of position resulting from pathological conditions of the ovaries and tubes is *ventrofixation*—that is, hysteropexis hypogastria—when properly performed, and no such operation is properly performed in which there is not complete abstention from interference with the round ligaments and the corpus uteri, except for a very short distance immediately above the

isthmus.[2] With the field of operation clearly in view any necessary repair of the tubes or the ovaries can be readily effected. It is seldom, if ever, justifiable to sacrifice either tube or ovary.

Without going into details I may state broadly the practical conclusions thrust upon us by the frequent occurrence of the pathological conditions which I have endeavoured to describe—viz., those not preceded by any observations of puerperal sepsis in the puerperium. (1) Every woman should be carefully examined six or eight weeks after her confinement; (2) if sub-involution without complication is discovered treatment should be at once begun with the object of bringing the uterus to its normal condition; (3) if uncomplicated retroflexion is diagnosed the use of tampons, followed by the temporary wearing of a pessary, may possibly be successful; (4) if tampons and pessary fail to restore the uterus to its normal condition and position adhesions must be suspected and efforts made to break them down by manipulations under anæsthesia; (5) failing success by manipulation ventrofixation with the necessary modifications is the only rational operation; (6) in every case of one-child sterility with retroflexion, whatever the negative evidence, puerperal sepsis to some degree should be assumed as the cause and ventrofixation resorted to.

In conclusion, I venture to predict that as the futility of pessary treatment becomes more generally recognised ventrofixation will take its proper place as the only reliable and successful method of treating all complicated cases of displacement of the uterus.

Manchester.

THE TUBERCULOUS GLAND: ITS SIGNIFICANCE AND TREATMENT.*

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Earlier View.

TWENTY years ago one's attitude towards the tuberculous gland was very different from to-day. Twenty years ago it was my custom to advise the immediate removal of the pronouncedly enlarged gland, and I sent to the surgeon all cases of cervical glands showing a tendency to caseate. The conception at that date was that by timely operative interference one might expect to arrest the spread of the tuberculous disease, and in numerous cases of strictly limited involvement the result did prove satisfactory.

Growing experience, however, showed that the procedure led to frequent disappointment. Oftentimes after operation the tuberculous process continued to advance, not only in those cases where one or two glands alone had been removed, but in those where more extensive dissecting operations had been undertaken with a view to complete extirpation.

Revision of View.

This led to a gradual reconsideration of the whole question and to more careful observation of the process of tuberculous invasion from its earliest and slightest manifestations in conditions where operative interference would not have been dreamt of, to the pronounced appearance presented by old-standing cases whether treated by operation or not.

Many years ago I began to follow the development of glandular tuberculosis in a number of individuals, from the minor degrees of change in early childhood through varying stages of development in the different instances. Such observation, prolonged through infancy on to adolescent and even adult life, proved of much interest and significance.

Suppuration merely an Incident.

It showed conclusively that *suppuration* in a gland is a relatively uncommon event as compared with the occurrence of *infiltration* of varying degree. In other words, suppuration is merely an incident, a relatively uncommon incident, in the course of progressive involvement of the glands by tuberculous infection. It is an incident which may never emerge—an incident which, as a matter of fact, does not emerge in by far the greater number of cases.

Yet in the earlier days, and I fear in large part still, attention has been chiefly centred on this incidental occurrence and too little on the actual process of tuberculous infection, which often runs its course quietly—it may be its fatal course—apart from the more clamant evidence of caseation or suppuration.

Course of Tuberculous Infection.

Let me ask you to recall briefly the path of tuberculous infection. I may not dwell at length on the much-debated question of the more frequent avenue of infection. Clinical and pathological evidence, including the results of experiment, goes to show that tuberculous infection may occur by the passage of the tubercle bacillus through the unbroken mucous surface. The facts of abdominal tuberculosis clearly support this view. In order that the tubercle bacillus may enter the system there is no need of a primary local lesion of the mucous membrane.

Without attempting to compare the relative frequency of entrance of the bacillus by different portals, I would press for acceptance the view that the throat—including under the term the nasal, pharyngeal, palatal, and tonsillar regions—is a vastly more common avenue of general tuberculous infection than is usually believed. It is unnecessary for the present to enter on the connexion between initial changes in the tonsils and other glandular structures, and the subsequent stages of infection. The significance of the tonsils and adjacent glandular structures in relation to tuberculous invasion is immense. I cannot accentuate too strongly the need for careful investigation of the tonsils, peritonsillar tissue, and the extratonsillar glands.

It is of first moment to follow the successive spread of change from point to point along the lymphatic chain of ducts and glands connected with the throat. The lymphatics of the neck, including the lymph nodes at the angle of the jaw, and the great network of glands in the supraclavicular triangle, are extremely often involved. Of especial frequency and significance is a fine multiple enlargement of lymph nodes in the supraclavicular triangle, commonly without any traceable tendency to caseation or suppuration. The infiltrative change is often so slight as to be passed over, unless deliberately investigated by careful palpation. The enlarged nodes—to be reckoned by the score—may be little more in size than a split pea. Many of them are even less. A refinement of ordinary palpation, requiring a certain amount of practice, is needed for their detection.

This general involvement of the lymph nodes of the supraclavicular region is, in practically every case, the expression of tuberculous infection, the infection spreading from the throat in the way just indicated. The chain of enlarged glands may be traced from the angle of the jaw throughout the supraclavicular region, and even below the clavicle. One may follow during months or years the gradual advance from point to point in this region, and perhaps later the further involvement—apparently by direct communication—of the axillary glands. Sooner or later I am satisfied that it occurs in the great majority of children.

Furthermore, there would seem to be a ready intercommunication between the cervical lymphatics and the thoracic lymphatics. It is probable that in this way—by primary invasion of the throat and subsequent spread along the lymphatic pathway—invasion of the lungs most commonly occurs.

Had the custom of this society permitted, I should have liked to present to you a series of cases illustrative of this important point—some in which the lymphatic involvement is still slight and limited to the submaxillary region; others, where the lymphatic involvement is widespread, covering the whole supraclavicular triangle, but without traceable pulmonary invasion; and others still, where, along with the submaxillary, supraclavicular, and perhaps axillary involvement, there is evidence of commencing infiltration at the apex of the lung on one or both sides.

Relation to Childhood.

This localisation of the initial lesion in a large group of tuberculosis—I believe the largest of all—is of far-reaching clinical significance. It corroborates the view I have long maintained as to the commonest site of infection. Tuberculosis is, in the greater proportion of cases, acquired in the early years of childhood. The earlier the invasion, the more

[2] For a description of this operation in detail see THE LANCET, Oct. 3rd, 1908.

* An address delivered before the Edinburgh and Leith Practitioners' Association on June 7th, 1910.

easy and rapid the spread. The absence of reactionary disturbance with enlargement and suppuration does not mean, unfortunately, a less virulence or less certainty of spread. The infection spreads uniformly and quickly in those cases where the glandular involvement is of so fine a character as readily to be missed. In the case where the glands are much enlarged there is often less danger.

The occurrence of tuberculous infection by way of the throat has the additional interest that it links tuberculosis with other infections commencing in the throat, such as diphtheria, scarlet fever, measles, rheumatism, &c. It emphasises more than before the importance of a watchful scrutiny of this portal from infancy onwards in relation to every kind of infection. In other words the mouth and throat of a child must be kept as *absolutely clean* as possible.

In the acuter infections, such as diphtheria or scarlet ever, the systemic involvement following the local lesion is rapid by the dissemination of virulent, doubtless highly soluble toxins, which either kill or lead to spontaneous cure by the elaboration of antitoxic products. In the case of tubercle, we have to deal with an infection of lower virulence, but one which is more or less continuously present to the child, or at least is frequently repeated through the conditions of compulsory environment during home and school life. The result is that in a very great proportion of instances the child is tuberculised by the time it is 15 years of age, as evidenced by traceable glandular and other changes. The after-course of the infection—which is extremely various in different individuals—and the bearing of the progressive lymphatic involvement on the distribution and other clinical manifestations of pulmonary tuberculosis I may not enter on now.

What concerns us especially now is the immense frequency during childhood of tuberculous involvement of lymphatic glands in the areas described. In the great majority of instances the glandular involvement is comparatively inconspicuous, so inconspicuous, indeed, that it is oftenest undetected.

If we trace the glandular changes in such cases several points of interest emerge. We find that, as a rule, the enlargement of glands becomes less and less marked in passing from the submaxillary region downwards—the proximal glands being commonly larger than those placed more distally. If you will follow the developing process from week to week and month to month, you will find the cause of this progressive variation in size to be the gradual extension of the process over successive glandular areas.

All this time the occurrence of suppuration is relatively rare. The reason why one gland caseates and suppurates and another does not is not always clear. It is not a question of simple maturation. Thus, glands nearest the seat of primary involvement do not necessarily caseate. If suppuration occurs it is not infrequent to find it in one or several glands more peripherally disposed.

Treatment.

In turning to the treatment of tuberculous glands, the practical point to be kept prominently in view is that caseation or suppuration is simply an incident in the process—an incident which is far from constantly present in the course of tuberculous infection. My present thesis is that rational *treatment must be directed chiefly to the essential lesion rather than to the incidental occurrence.* The fine, multiple, and spreading involvement of lymph nodes is the important thing. In the past disappointment has resulted from the direction of attention to the more conspicuous, but less essential, lesion, and there has been a corresponding limitation of treatment to operative dealing with caseous glands.

Operative Interference.

It is freely admitted that the immediate result of operative treatment has been usually satisfactory, *so far* as the removal of disfigurement is concerned. In some cases it has gone further than this, and the treatment may be fairly described as radical. In the majority of cases, however, such operative treatment is of local and partial value only. The very success of the operation has diverted attention from the tuberculous infection as such, and the final result has been often disappointing.

In sanctioning operation this fallacy must be kept in view. In numerous instances the effect of operation can only be, from the nature of things, partial, for it is obviously impossible to remove all the glands which are involved. In numerous instances in my experience, where operation has seemed immediately successful, suppuration, or at least disfiguring enlargement, has recurred, and, even after repeated operation, has recurred again. In other instances, after several operative attempts, the effect of lymphatic extension has become so urgent as to call for further treatment after the possibilities of surgical relief were exhausted. I could submit a series of cases in illustration of this point. I could show you cases where, after repeated operation, enlargement of the glands continued with a gradual extension downward and more deeply, with the ultimate determination of pulmonary tuberculosis. I might show you cases in which an extensive operation had been undertaken for deep-lying glandular tuberculosis, where little relief followed the operation, and cases where disfiguring enlargement in one set of glands removed by operation was speedily succeeded by a like disfigurement in another series. I should like to have brought before you a case at present in my wards, where, through the spread of the process, after extensive operation, to more deeply-seated glands, dyspnœa of aggravated type supervened, and where further application to the surgeon only elicited the reply that the surgeon could do no more. I have in view cases operated on some half a dozen times, with the same final result that the disease was not eradicated, because, indeed, ineradicable along these lines.

Vaccine Therapy.

In presence of a progressive infection of this indolent, creeping sort, it seems to me that the usual method of interference by the removal of one or several glands cannot be regarded as sufficient treatment, even if the procedure be admitted satisfactory from the incidental point of view. A more definite opposition must be offered to the spreading infection. This opposition is afforded by vaccine therapy. Our purpose must be the production of immunity by stimulation of the natural protective mechanism. We must seek to activate the leucocyte and the bacteriotropic elements of the lymph stream and blood. And the outlook is most encouraging. In exhibiting tuberculin we make use of an agent closely related to the infecting organism, and there is abundant ground for the belief that we thereby reinforce nature's own effort at immunisation. While lacunæ exist in our theory as to the mode of action of tuberculin, there can be no doubt whatever as to its great therapeutic value.

The effects can be traced readily in superficially placed glands. Immediately following the first injection of a suitable dose the gland may be found slightly enlarged and possibly tender. The gland is congested. In the course of a few days the gland under observation will be found reduced in size. Sometimes it may take more than one injection before this is evident. With successive doses the alteration in size becomes more and more definite. The change takes place throughout the entire chain of glands. The larger proximal glands shrink in size gradually, while the smaller glands in the periphery seem to disappear—literally to melt away. An apparent formless mass of matted glands tends to become reduced both in size and in complexity. In grosser conditions, with much cervical deformity, the advance of local improvement is remarkable. The measurement of the neck is altered in striking fashion. Thus in one case at present under observation the neck, which was hugely disfigured, has resumed almost a natural appearance, a reduction of 2½ inches in circumference being registered. Another patient told me the other day that in place of a 16½ inches collar which he had been compelled to adopt on account of the swelling he now found one of 15½ inches too wide.

The systemic effects are no less striking. During treatment the two patients I have just mentioned put on no less than 25½ pounds and 14½ pounds respectively. Further, lung symptoms, which were already aggressive, including in one instance sharp hæmorrhage on more than one occasion, with corresponding physical signs, have dropped into the background. In the other case, the conditions had become associated with respiratory symptoms of serious moment. When the patient came under treatment the neck was greatly swollen and the patient cyanosed, and so dyspnœic that he could hardly walk the length of the inner corridor of the ward. In bed he had to sit up in a state of orthopnœa. It looked as if at any moment he might die from asphyxia. Under treatment with tuberculin not only has the local disfigurement been largely removed—the huge, ill-defined mass being broken up into a collection of discrete glands—but the

dyspnœa has yielded completely, the patient resting comfortably at night and having walked the other day nine miles without difficulty.

Procedure and Dosage.

A word as to procedure. It is best to begin treatment with *small* dosage. This is the more important because of the frequency with which glandular tuberculosis is associated with visceral involvement. By repetition of the same dose so as to exclude the fallacy of a missed reaction, and by gradual increase, if no effect has been produced, it is commonly easy to determine the *minimal* dose which is *effective*. So long as the given dose is effective in producing local change or systemic disturbance, however slight, it is wise to repeat the same dose, or, should the reaction seem excessive, to reduce it. Thereafter the dose may, in similarly cautious fashion, be progressively increased. The effect is estimated by careful observation of temperature, pulse, local appearances, and the patient's aspect. The determination of the opsonic index is, in my experience, unnecessary.

If incidental suppuration occurs evacuate the pus in the simplest way possible. I have no objection to the surgical extirpation of the gland, but it is often unnecessary. Simple aspiration of the gland will suffice in a large proportion of cases. I have thus, on several successive occasions, aspirated pus amounting collectively to a couple of ounces with the happiest result. In some instances the effect may be hastened by small incision. In all cases of such interference the tuberculin should be continued. As to the tuberculin itself, there are many preparations available. For my own part I have used Koch's original tuberculin, Koch's T.R., and latterly Béraneck's tuberculin. As initial dose I have used, of Koch's original tuberculin, 0·0001 gramme; of T.R., 1-5000th to 1-2000th milligramme; and of Béraneck's tuberculin, 0·1 cubic centimetre of a 1 in 100,000 solution.

Conclusions.

To shortly sum up conclusions drawn from prolonged observation and treatment of such cases I should say: 1. Watch for the earliest indication of spreading involvement of lymphatic glands in young children. Especially have regard to distribution downward from the extratonsillar gland into the supraclavicular triangle. 2. Regard such process as almost certainly of tuberculous nature. If in doubt make use of the tuberculin test (cutaneous or percutaneous). 3. Treat as soon as may be with tuberculin on the lines indicated, while at the same time carefully cleansing the throat and correcting the child's faulty environment. 4. If incidentally one or other gland suppurate, evacuate in simple fashion, continuing the use of tuberculin.

There is ample reason for the statement that if such procedure be followed the glandular disturbance will commonly yield, grosser deformity will become rare, and, what is vastly more important, the risk of the spread of tuberculous infection to internal organs will be greatly lessened.

Edinburgh.

JAPAN-BRITISH EXHIBITION.—In the Japan-British Exhibition an important place is assigned to chemical industry. Messrs. Burroughs, Wellcome, and Co. have here a striking exhibit of the various "Wellcome" manufactures, many of which are displayed in vases and amphoræ of ancient Grecian design. These vases are replicas in glass of actual relics of that old civilisation to which we owe so much, and their association with the latest developments of synthetic and analytic chemistry is quaint and pleasing, while their contents serve to show that much is now being done to win back this department of scientific industry from foreign rivals. A series of photographs of scenes from the "Wellcome" materia medica farm at Dartford is also exhibited. This farm was started some six or seven years ago for the culture of medicinal plants, chiefly those which are indigenous to England, and is conducted partly with a view to experiment and research, and partly to obtain supplies for pharmaceutical purposes of fresh herbs of known origin and of uniformly high standard. The results of this scientific herb culture, checked and standardised by chemical analysis and physiological tests, are calculated to bring a new element of exactitude into the somewhat hazy posology of some vegetable substances.

THE ADMINISTRATION OF THE PUBLIC HEALTH AND EDUCATION ACTS IN RELATION TO THE PREVENTION AND CURE OF DISEASES OF THE THROAT AND NOSE.

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(*From the London School of Economics.*)

(*Continued from p. 1749.*)

STATISTICS showing the results of school inspection are notoriously unreliable [1] and not mutually comparable. Reference need only be made to the results of school inspection quoted above to satisfy oneself on the point. Compare also the following table:—

Statistics based on Reports received from 20 Counties and Towns in England. Number of Children Examined over 40,000.

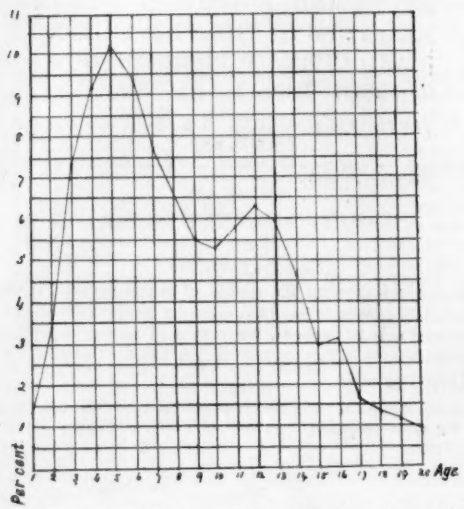
Reported to be suffering from—	Percentages.		
	Lowest.	Highest.	Apparent average.
Tubercular disease	0·015	4·3	0·8
Bodily deformity	0·04	6·0	2·4
Defective nutrition	0·3	19·0	3·0
Uncleanly head and body ...	1·0	60·0	18·0
Decayed teeth	0·7	25·0	8·0
Enlarged tonsils	2·0	23·0	13·0
Adenoids	1·5	21·0	8·0
External ear disease...	0·8	3·5	1·8
Eye disease	0·4	8·7	3·0
Defective vision...	4·1	39·0	13·0
Mentally defective	0·3	4·2	1·3
Heart disease	0·4	5·0	1·5
Lung affection	0·1	2·4	1·4
Skin diseases	0·9	2·1	1·9

One of the chief reasons for this is that the tests and standards used are variable and arbitrary and influenced by the personal equation of the examiner. But they show sufficiently well the nature of the problems in treatment and prevention set before us. We read a great deal about mouth breathing, glands in the neck, running at the nose, deafness, discharging ears, backwardness at school, deformities, liability to fevers, and other illnesses. If anyone thinks to avert all these evils by a timely operation for the removal of tonsils and adenoids he will be grievously disappointed. There is no royal road to health in these cases except in a limited number. An attempt is made in another part of this paper to give a general account of this operation as carried on in London at the present time. What is the condition of the patients at the time of operation and what are their ages? The first question is sufficiently answered by saying that practically all are suffering in some way or other. Therefore, theoretically at least, earlier operation would prevent a good deal of illness. It would certainly have that effect in fact if the cases could be properly selected. Evidences of neglect abound and many apply for treatment only when permanent damage has already been suffered.

In order to answer the question as to the age of the patients I have collected a total of 4769 persons who underwent operation in nine hospitals and tabulated them according to their ages. (See Tables A and B and Fig. 1.)

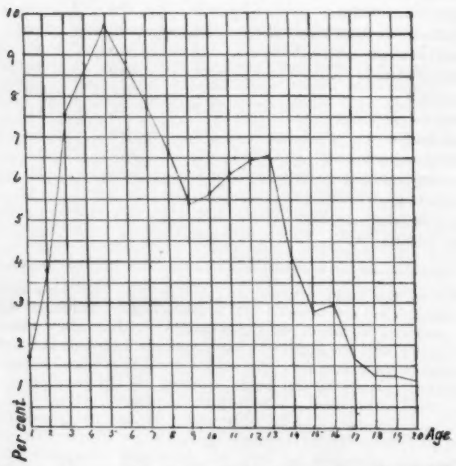
[1] THE LANCET, June 26th, 1909, p. 1851.

FIG. 1.



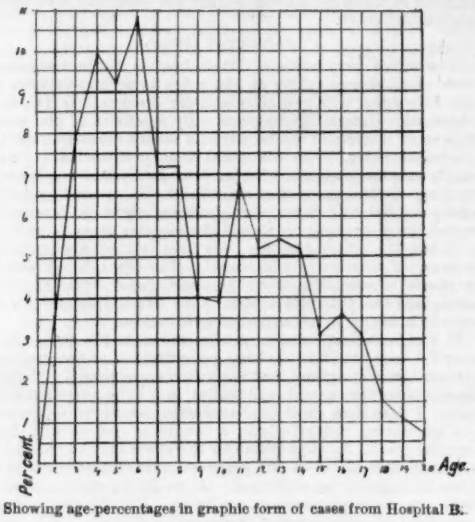
Showing age-percentages in graphic form of cases from nine hospitals.

FIG. 2.



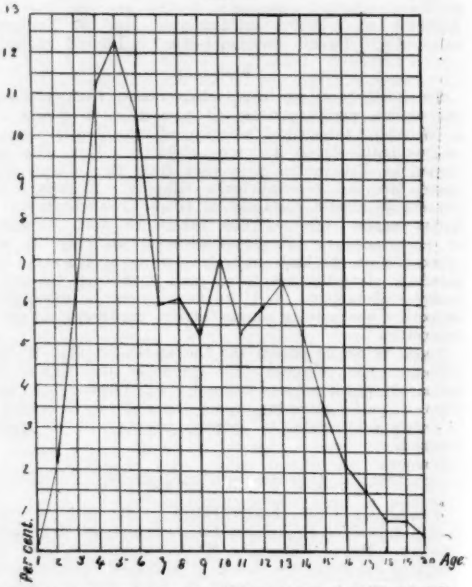
Showing age-percentages in graphic form of cases from Hospital G.

FIG. 3.



Showing age-percentages in graphic form of cases from Hospital B.

FIG. 4.



Showing age-percentages in graphic form of cases from Hospital E.

TABLE A.—*Patients who underwent Operations for Removal of Tonsils and Adenoids at Different Ages.*

Hospitals.	Years of age.																			Total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	—	3	10	5	8	9	5	9	2	3	4	6	5	7	3	8	—	1	2	1	91
B	2	16	35	44	41	48	32	32	18	17	30	23	24	23	14	16	14	7	5	3	444
C	3	10	11	31	18	24	21	12	12	9	11	13	9	6	2	5	3	3	2	1	206
D	1	2	12	9	21	14	19	8	10	9	9	8	7	10	9	3	5	2	—	—	158
E	1	12	29	51	56	48	27	28	24	32	24	27	30	24	16	10	7	4	4	2	456
F	1	7	6	14	14	13	8	6	11	8	6	9	11	11	8	7	1	4	4	4	153
G	51	106	213	244	276	245	220	189	156	161	174	184	186	117	80	84	46	36	36	33	2836
H	1	4	20	31	32	31	21	22	17	11	14	19	10	14	7	15	5	5	3	2	284
K	2	—	13	9	18	16	17	11	14	5	9	10	4	7	3	1	—	2	—	—	141
	62	160	349	438	484	448	370	317	263	255	281	299	286	219	142	149	81	64	56	46	4769

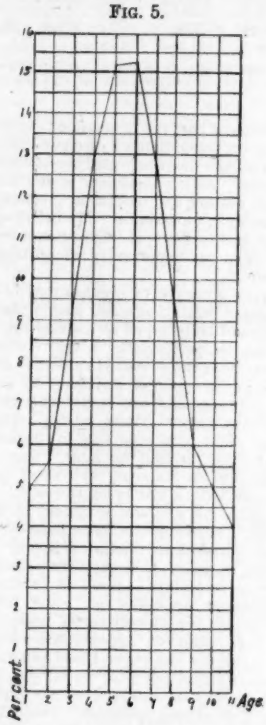
TABLE B.—*Showing Percentages at Different Ages.*

Years of age.	Number.	Percentage.	Years of age.	Number.	Percentage.
1	62	1·30	11	281	5·80
2	160	3·35	12	299	6·26
3	349	7·31	13	286	5·99
4	438	9·13	14	219	4·59
5	484	10·14	15	142	2·97
6	448	9·39	16	149	3·12
7	370	7·75	17	81	1·69
8	317	6·64	18	64	1·34
9	263	5·51	19	56	1·17
10	255	5·34	20	46	0·97

For purposes of comparison I have made curves from some of the components of the 4769 cases. (See Figs. 2, 3, and 4.)

Table C shows the age-percentage distribution in a series of 2410 cases operated upon in the Great Ormond-street Hospital for Sick Children. It is convenient to keep this series separate from that given in Table A.

FIG. 5.



Showing in graphic form the age-percentage of 2410 cases from the Great Ormond-street Hospital.

TABLE C.—*Showing the Age-percentage Distribution in a Series of 2410 operations.*

Years of age.	Number.	Percentage.	Years of age.	Number.	Percentage.
1	119	4·93	7	306	12·69
2	134	5·56	8	227	9·41
3	220	9·12	9	144	5·97
4	312	12·94	10	119	4·92
5	365	15·14	11	98	4·06
6	366	15·18			

Let it be borne in mind that these diagrams and tables are made from a collection of patients actually operated upon for the removal of tonsils and adenoids, and that these patients arrived in various out-patient departments in the ordinary way. The diagrams show at what period in their career these patients began to suffer from their throat in such a manner as to attract the attention of those responsible—e.g., parents. There is a general similarity in all the curves, Figs. 1 to 4. In all of them the age 5 is the highest point reached. In all of them the percentage rises rapidly from age 1 to age 5 and falls more gradually to age 20. Also they all have a slight temporary rise at or just before the age of puberty. It is quite possible these facts are to some extent merely a reflection of the greater interest which parents may be supposed to take in their children at the period of their entrance into, and their departure from, the public elementary schools. But, in addition, the rapid rise of the line up to age 5 unquestionably shows that the causes of these throat maladies begin to act early[2] and before the children come under the notice of the school medical officer. Some school officers have found that there is no relation between the occurrence of adenoids and poor home conditions or, to put it in another way, that a school attended by very poor children is no more likely to show a large proportion of adenoid cases than a school attended by relatively better class children. But so many factors come into a wide question of this kind that it is exceedingly difficult to draw any valid inferences from them. The elaborate report of the City of Edinburgh Charity Organisation Society above referred to gives an account of the homes and surroundings in the case of 1400 school children. If on that report we take as a standard of home conditions the number of rooms occupied by each family we find there is not much difference in the incidence of throat disease as represented by tonsils and adenoids on the different grades. Table D shows the ratios between the numbers of those affected and those unaffected with tonsils and adenoids in the different classes of "house."

TABLE D.—*Showing the Rates between the Numbers of those Affected and those Unaffected with Tonsils and Adenoids in the Different Classes of "House."*

—	Number of rooms.									
	1		2		3		4		5 or more.	
Tonsils and adenoids	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Numbers	68	165	216	564	83	191	17	39	2	3
Ratios	2·42		2·61		2·30		2·29		1·5	

If anything, these ratios are against the better class of "house." But obviously we must take into account, not only the number of rooms in a house, but the number of occupants, the cubic air-space per occupant, the number of wage-earners in the family, the amount of the wages, the manner of spending the wages, the amount of charitable aid obtained, as well as personal habits of the individuals. It is, however, *a priori* likely[3] that insanitary home conditions bring about insanitary conditions in the nose and throat of children and that, apart from adenoid growths, a large amount of nasal "catarrh," nasal suppuration, nasal obstruction, and mouth breathing is thus produced. Just in the same way, the lower we go in the social scale the more commonly do we find "running ears" and other septic conditions in children. In this respect the problems respecting children's teeth, throats, noses, and ears are on parallel lines. It is clear that any complete system of prevention directed against these diseased conditions of the throat with all their various sequelæ will have to begin long before the children arrive at the schools. In this connexion notice should be directed to the work done in what are called "infant consultations," which are special clinics dealing solely with infants. For example, at the St. Marylebone General Dispensary in Welbeck-street, W., these consultations are carried on by Dr. E. Pritchard, who is the

[2] Sutherland: Diseases of Children, p. 142. Mrs. Sidney Webb: p. 21 of report referred to supra. THE LANCET, August 15th, 1903, p. 474.

[3] Waggett: Diseases of the Nose, p. 81.

pioneer of this kind of work in London. The work is of an extremely valuable nature and it might with obvious advantages to the public be more widely extended and ultimately joined up with the school medical service. An account of the work in infant consultations is given in the annual reports of the St. Marylebone General Dispensary for the last three years, and reference should be made to these reports by those interested in the subject.

Only by some such means shall we arrive at a sound method of preventive medicine.[4] The early years of life are those in which specific fevers are most rife, and it is not surprising that so much damage has already been done when school life begins. On account of the vagueness of patients' statements and for other causes it is at present impossible to show by statistics any direct relation between the presence of enlarged tonsils and adenoids and the incidence of specific fevers, but at the same time it is impossible to resist the thought that such a connexion does exist. What is required is a system of registration which will bring the fever hospitals into relations with the school medical service.

Coming now to the actual treatment[5] of the conditions found when the children have entered school, it should be postulated that unless this work be well done it had better not be done at all. Otherwise the whole scheme must fall into disrepute, and everyone—general public, ratepayers, and the medical profession—will be dissatisfied. It is absolutely certain that whatever the cost[6] may be the best will be the cheapest.

"Existing institutions are to be utilised as far as possible."[7] But are existing institutions at all suitable for what is now needed? This depends entirely upon the character of the work required to be done. Is a crowded out-patient department a suitable place for the treatment of chronic discharging ears? Is such a department a favourable place for the cure of simple inveterate mouth-breathing due to bad habits or uncleanliness? Is the ordinary dental out-patient department the best venue for the preventive treatment of decay of the teeth? In these three groups the main and essential part of treatment is of necessity routine, prolonged and more or less tedious. And it will be found that the greatest and the most valuable part of "school doctoring" will be of this very nature.

In the case of children whose breathing is defective it should be the business of a competent surgeon to assess carefully the different factors in each individual. There should be no inducement for hurrying over this, the diagnostic process. Adenoids may be inferred from symptoms alone, but if children are subjected to operations on symptoms alone much useless and unnecessary operating will be done, and this ought to be avoided. There are many cases where all would agree that operation is not only the best but the only satisfactory treatment of first instance. There are a number of cases, again, where all would agree that operative treatment is likely to do no good. Between these two extremes lies a large class of cases which might give rise to differences of opinion.[8] The work of diagnosis and examination of these children is so enormously important that it ought to be done with the extremest care and thoroughness. Moreover, like the work of school inspectors themselves, it is of such a nature that any one man can only do a certain limited amount of it efficiently per day or per week, per month or per year. It is absolutely certain that after a certain point the value of routine work of this sort deteriorates.

Many out-patient departments at the present time are so crowded that it is physically impossible for this quiet methodical diagnosis[9] of each case to be carried out. It is certain that as operation is practically the only method of treatment here available it is applied to numerous cases where other simpler and better, though more tedious, means of remedy could be devised. Hence discredit is cast by some upon the operation for tonsils and adenoids. In the cure of chronic discharging ears it is of practically no use to supply the patients themselves with lotions or drops for purposes of syringing and disinfecting the ears. To obtain satisfactory results there must be skilled, specially trained nurses available.[10] A surgeon should personally instruct these nurses and generally exercise supervision. Exactly the same applies to cases of nasal obstruction, nasal discharge, &c. Those cases which are subjected to operation as well as those deemed unsuitable for operation should be attended to by skilled trained nurses under the general instruction and supervision of a surgeon. Here also it is often a simple matter of cleanliness, but besides that there is the inculcation of proper breathing habits[11]—i.e., breathing exercises systematically carried out. In connexion with breathing exercises the development of the chest ought to be observed. This is best done by means of callipers. Two diameters of the chest are taken, the transverse and the antero-posterior at the same level, and the ratio between them determined. What may be called the normal development of the chest is known, and deviations from this normal are best found by the calliper ratio. Is an out-patient department of the present day a suitable place for such treatment?

(To be continued.)

[4] Cf. Dr. A. Newsholme on the Prevention of Disease by the Coördination of Medical Services, British Medical Association, Exeter, 1907.
[5] THE LANCET, May 28th, 1904, p. 1507.
[6] The Times, March 20th, 1908.
[7] Ibid., Dec. 9th, 1908. THE LANCET, vol. i., 1908, pp. 175, 592, and 1315; vol. i., 1909, pp. 805, 997, 1343, 1347, 1398, 1484, 1554, 1635, 1714, 1793, and 1862; vol. ii., 1909, pp. 168, 1367, 1383, 1476, 1633, and 1699. Brit. Med. Jour., 1908, vol. ii., pp. 1040, and 1311.
[8] Brit. Med. Jour., 1908, vol. ii., 946.
[9] THE LANCET, April 14th, 1900, p. 1073.
[10] Daily Telegraph, Oct. 22nd, 1908. THE LANCET, vol. ii. 1909, p. 1393.
[11] Chiari: Krankheiten der Nase, p. 77. Waggett: Diseases of the Nose, p. 86.

POINTS IN FAVOUR OF EARLY OPERATION IN APPENDICITIS.[1]

BY ARTHUR H. BUCK, F.R.C.S. EDIN., M.R.C.S. ENG., L.R.C.P. LOND.,
SURGEON TO THE SUSSEX COUNTY HOSPITAL; SURGEON TO THE BRIGHTON, HOVE, AND SUSSEX THROAT AND EAR HOSPITAL.

IN a paper which I had the pleasure of reading before this society in 1905 on appendicitis I discussed the functions of the appendix and the diagnosis and treatment of inflammation of that organ. As the treatment of election I advocated rest with certain dietary and medicinal precautions during an attack and removal in quiescence. My belief as to the treatment of election has so changed from further experience that I am glad to have an opportunity of putting my present opinions on record.

I am now very strongly of opinion that in every case of inflammatory appendicitis diagnosed within the first 24 hours the appendix should be removed at the earliest moment that an operation can be performed. I say "inflammatory" to distinguish these from the so-called catarrhal attacks. These occur generally as the result of stricture, do not necessitate the patient's lying up, and are recurrent perhaps every day or two, sometimes several times a day, often for a long period of time. The pain is colicky in character, and lasts from a few minutes to half an hour. Such an appendix should undoubtedly be removed, but there is not so much urgency in a case with a history of this sort. If I had not the history to guide me, and saw a patient in the first attack with severe pain, I would advise immediate operation.

I will now put forward arguments in favour of immediate operation in the ordinary inflammatory attacks. I take it that everyone is nowadays agreed as to the propriety of removing a diseased appendix at some time or other. Perhaps there are a few—a very few I hope—who still lay down a rule that cases of appendicitis should never be operated on. After my last paper I had quite a kindly letter from a man who assured me that in 50 years he had never had a case of appendicitis operated on nor had he ever lost one or seen one that needed operation. The practice of some, I feel sure, is to allow the first attack to quiesce if it will, but not to recommend operation unless a second attack takes place, and then only after that has passed over again by good luck to a state of quiescence. Others, and they are numerous, still adopt a palliative treatment during the first attack and have the appendix removed during quiescence.

Now, presupposing that a case does quiesce and is operated on in quiescence, rest is necessary for about three weeks, or at least 14 days after the temperature becomes normal, before the operation is undertaken. Should the patient move from bed during that time, and I have seen this happen many times, a relapse may quite easily occur,

[1] A paper read before the Brighton and Sussex Medical and Chirurgical Society.

necessitating a further rest if the appendix is to be attacked in an uninflamed state. After all this the patient is incapacitated for three weeks following the operation. The period of enforced idleness would thus be six weeks at least, quite possibly more, to say nothing of the pain and anxiety experienced during the illness. Even after three weeks of normal temperature I have found encysted collections of pus, necessitating drainage with all its concomitant disadvantages.

But I prefaced this argument by presupposing that the attack would quiesce, which is absurd, as Euclid would say, for who can say whether or no any case will quiesce. Even whilst waiting, and with no warning whatever, perforation may occur, setting up at once a dangerous peritonitis. Again, a palpable swelling usually forms and in nine cases out of ten pus collects somewhere in the confines of that mass. Who can say whether that pus will escape by the bowel or into the general peritoneal cavity, whether it will track into the pelvis, up behind or in front of the cæcum and colon, or what is going to happen. These are cases of infinite doubt and anxiety to every medical man who has an appreciative knowledge of the possible dangers. It may be a time of great pain, suffering, and anxiety both to patients and friends. The latter are generally insistent on knowing exactly what is going to happen, and no one can with any certainty tell them. One *hopes* that the case will quiesce, one may *believe* that it will, but one does not *know*.

I remember so well that I happened to meet a practitioner about 18 months ago who told me that he was attending a very mild case of appendicitis, and I expressed the view that one never knew what might happen, even in what appeared to be the mildest case. This gentleman expressed a very definite opinion that no operation would be necessary, at any rate, till quiescence. 36 hours later, in the middle of the night, I was opening the abdomen of that patient and I found a small collection of pus near the appendix, which lay in the centre of dense adhesions, and a large, but localised, collection of turbid and stinking fluid in the pelvis. About two months later I removed the appendix. This case illustrates well the waste of time involved if the waiting method be adopted, the dangers to which the patient is exposed, the suffering entailed by drainage, the anxiety caused by the two operations to himself and his relations, the unnecessary expense, and lastly, but not least, the difficulty of avoiding a subsequent ventral hernia.

In favour of operating in the first 24 hours are the following facts. The larger number of appendices will then be found swollen, inflamed, and turgid, perhaps covered with lymph, perhaps with a little turbid fluid in their neighbourhood. At this time Nature will be making vigorous efforts of resistance. Dilated vessels will have brought to the part blood rich with antibodies and leucocytes, created at once in opposition to the pathogenic organisms and their toxins. Adhesions will not yet have formed. Remove the focus of infection, leave a small silk ligature in its place, and the powers of resistance already called into play find it easy enough to embed that ligature and the stump of the appendix in a perfectly satisfactory manner. Provided that at the same time care is taken to protect the wound in the abdominal wall from infection whilst removing the appendix, this heals by first intention and one obtains a perfect result.

It is these results that have induced me to change my views. Here we have as satisfactory an ending to the case as after operation in quiescence. I used to believe that drainage would be necessary after operating on any inflamed appendix. It is not so in such cases as I have just described, and they are the majority.

But again I draw attention to the fact that before operating even in the first 24 hours it is absolutely impossible to say what exactly will be the state of affairs found when one opens the abdomen. I have myself found an unsuspected perforation where the symptoms were as mild as they were deceptive. I have found the appendix not perforated but yet already surrounded by pus, which has extended to the pelvis and necessitated drainage. Here, however, drainage was only necessary for 48 hours or so, the fluid quickly becoming clear and the result was most satisfactory. I have also found the appendix distended in a manner that I can only compare to a bomb waiting to explode. In one case it was about 7 inches long, horseshoe-shaped, of about the size of small intestine, held down on to the floor of the iliac fossa by a short meso-appendix and somewhat difficult to remove on account of the extraordinary distension and tension of its walls. The contents were to the naked eye blood and a fæcal calculus. Obstruction, preventing the return of these into the cæcum, was complete, and on puncturing the distended walls after removal the blood squirted out as from a syringe. In this case the temperature and pulse-rate were raised, but pain, spasmodic and excessive, with great rigidity of muscles, were the prominent symptoms.

In another case the temperature was normal and the pulse-rate 88, but spasmodic and violent pain had occurred during the night. Rigidity was at once apparent on the least pressure over the appendix. There was considerable difficulty in persuading this patient, who was between 50 and 60 years of age, to have an operation, and I finally said that I did not feel justified in leaving the house without her appendix. Fortunately she consented. The appendix was 5 inches long and presented the same bomb-like characteristics as in the last case. Half an inch before its junction with the cæcum was a complete stricture. When removed it could be held out by one end as a rigid rod. When punctured fæcal pus squirted out with great force, leaving a flaccid sac with ulceration commencing in several parts of the mucous membrane. It could have only been a matter of a few hours before it would have burst into the peritoneal cavity. There were no adhesions around, and I firmly believe the patient would have died.

The last-mentioned cases are undoubtedly two instances where I was lucky enough to operate in what used to be described, and rightly too, as fulminating cases, but I caught them immediately before explosion. I said lucky, but surely it should not be a matter of luck; it should be a matter of routine. It is a comparatively simple matter to remove an appendix at this early stage, before dense adhesions have formed. I find that a per-rectal or valvular rectal incision is best. Fairly forcible retraction may be necessary, but one gets a much better view of the parts.

I have not touched on the question of operating in those cases which have gone over the 24 hours when first seen, but my experience in the last five years leads me to say that the earlier an operation is undertaken the better, and that whenever the appendix can be safely removed it should be.

To sum up. The prognosis of any case of inflammatory appendicitis is absolutely uncertain. If an operation has to be undertaken in advanced stages drainage will be necessary and probably prolonged. Peritonitis more or less general may occur at any time. If the appendix is not removed the patient lives on the brink of a precipice. If the appendix is removed in the first 24 hours one knows where one is. Uncertainty is removed together with the appendix. The majority of cases will heal by first intention. Those that do not are such as would certainly need surgical interference during the attack. Drainage, if necessary at all, is necessary for a far shorter period. If it *is* necessary one is only too pleased to have got at the trouble so early. The earliest possible knowledge of the exact nature of infection will be obtained; a stock vaccine can be injected if necessary within a few hours, to be followed at the earliest possible moment by a vaccine prepared from the patient's own pus. This is, I believe, the only chance of saving a case with a virulent streptococcic or other infection. Finally, I repeat that operation in the first 24 hours in cases of inflammatory appendicitis I believe to be the proper routine treatment.

Brighton.

INTERNATIONAL CONGRESS OF LEGAL MEDICINE, BRUSSELS.—This Congress is announced to take place from August 4th to 10th next. It has been promoted by the Belgian Society of Legal Medicine, of which the President is Dr. Eugene Dewez and the secretary-general is Dr. Camille Moreau. The Minister of Justice and the Minister of Public Health and Hygiene of Belgium have accepted honorary presidencies of the Congress. Those wishing to become members of the Congress must address the treasurer, Dr. Héger-Gilbert, Place Jean Jacobs, 9, Bruxelles. The subscription is 20 francs, by a cheque or order payable at Brussels. Reports and communications must reach the Secretary-General, Dr. Camille Moreau, Rue de la Gendarmerie, 6, Charleroi, Belgium, by July 1st. An exhibition of medical apparatus and instruments will also be made.

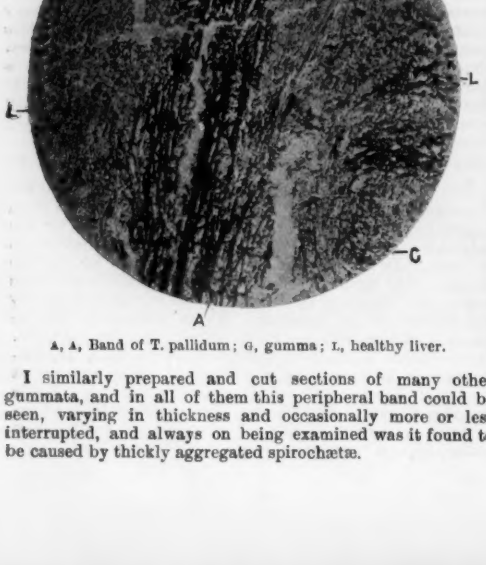
A NOTE ON THE DISTRIBUTION OF TREPONEMA PALLIDUM IN CONGENITAL GUMMATA.

BY ERNEST ALBERT SHAW, M.B., B.C. CANTAB.,
FLEET-SURGEON, R.N.; ACTING BACTERIOLOGIST TO GOVERNMENT OF HONG-KONG.

IN the autumn of last year, while acting as bacteriologist to the Hong-Kong Government, I was carefully examining all the bodies of infants which came to the public mortuary for an undoubted case of congenital syphilis so as to secure the liver to use in investigating the Wassermann reaction for the diagnosis of syphilis. In my desire to be absolutely certain of what I was using I discarded several livers from what appeared to be undoubtedly congenital syphilitic infants, because smears from these stained for 24 hours with Giemsa showed no spirochætæ. However, I got one at last which did show them and which was used for the purpose mentioned. Shortly afterwards another appeared in which the liver (from an infant a fortnight old) was studded with gummata of all sizes from a pin's head to a small cherry. From this I made many smears and was gratified to find spirochætæ present in every slide looked at. I then determined to cut sections prepared by Levaditi's modification of Ramon y Cajal's method for nerve fibrillæ, and amongst the sections cut were some passing through a small gumma. In all of the sections spirochætæ could be found, but only in occasional fields in the sections not containing the gumma.

In a section of this small liver gumma (which was about $\frac{1}{8}$ inch in diameter) I was struck by the appearance of a dense black band disposed more or less concentric to the centre of the gumma but at its periphery. This band occupied the position of a boundary zone between the healthy liver tissue and the gumma tissue; it was, in fact, the periphery of the gumma. This was seen with a $\frac{1}{6}$ inch objective. On applying the $\frac{1}{1\,2}$ inch oil immersion, this black band resolved itself into a dense felted network of spirochætæ which were lying at every possible angle to the plane of section, and overlying each other like handfuls of pins. Proceeding inwards from this band towards the centre of the gumma there were many more, but proceeding outwards from the black band above mentioned they rapidly diminished in number as healthy tissue was reached, till at a distance from the gumma of about a millimetre they were very infrequent indeed.

FIG. 1.

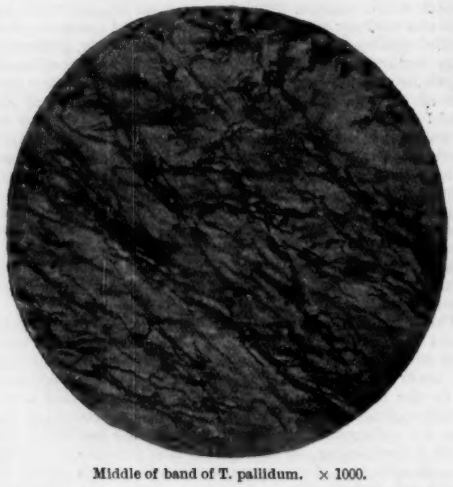


A, A, Band of T. pallidum; G, gumma; L, healthy liver.

I similarly prepared and cut sections of many other gummata, and in all of them this peripheral band could be seen, varying in thickness and occasionally more or less interrupted, and always on being examined was it found to be caused by thickly aggregated spirochætæ.

A study of these sections led one to the conception of gumma growth in this type of case, commencing as a small colony of spirochætæ, gradually enlarging in all three dimensions and ultimately developing an encasing capsule, more or less spherical, of thickly agglomerated spirochætæ; then growth proceeding from this peripherally by multiplication of its component individuals, with the spirochætæ inside the gumma, multiplying at the expense of the tissue territory

FIG. 2.



Middle of band of T. pallidum. × 1000.

thus gradually acquired, until its nutritional possibilities had been by degrees exhausted and it became that half-necrosed area with which we are familiar as the middle of a gumma, and in the centre of which spirochætæ were no longer recognisable as typical. If this conception of gumma growth be true, it naturally follows that smears on glass slides made from the surface of a section taken tangentially to the gumma at its junction with healthy tissue should be exceptionally rich in spirochætæ. I tested this, fixing the smears with methyl alcohol and staining for half an hour with heated Giemsa, and found spirochætæ varying in number from 12 to 30 in every field, instead of, as before, a few in each slide. To confirm this I sent a piece of the liver to my friend, Mr. J. Bell, of the Government Civil Hospital, Hong-Kong (to whose great kindness I owe the microphotographs accompanying this note), and asked him to try this way of preparing smears. He did so with a similar result.

Hong-Kong.

NOTES ON SOME OBSCURE CASES OF EXTRA-UTERINE GESTATION.

BY T. B. BROADWAY, M.B., CH.B. GLASG.

THE three following cases of extra-uterine gestation occurred in my practice within the last two years. In each case the patient complained of something giving way in the iliac region followed by intense pain, nausea and vomiting, and a uterine discharge.

CASE 1.—The patient, a primipara, aged 21 years, had recently married. She had missed menstruating for three months, but had no other symptoms of gestation. While standing on a chair to hang up a picture she felt something give way inside her, and this caused such severe pain in the right iliac region that she fell off the chair. I was summoned to her and saw her within a quarter of an hour after the accident. She was lying on the floor in the dorsal decubitus with the feet drawn up. The pulse was shallow and the rate was 141 per minute; the respirations were purely thoracic and numbered 29 per minute; and she had an anxious look on her face. On removing her to bed and examining her the abdominal muscles, especially in the right iliac region, were rigid and board-like; per vaginam nothing

definite could be made out. When I saw her a couple of hours later she complained of intermittent cramp-like feelings in the lower abdomen (uterine contractions). The abdominal muscles were still rigid; per vaginam beyond some slight increased resistance in Douglas's pouch nothing definite could be made out; there was no vaginal discharge. On the next morning when I called the patient said that she felt better. The colic, as she called it, had ceased, and she had come on unwell; clots had also been passed. On examining them I came across the decidual membrane. This with the history of amenorrhœa helped towards a definite diagnosis of extra-uterine gestation. As the patient felt better she would not hear of an operation. I, however, kept her in bed, and all went well till the tenth day, when against my wishes she got up and did some washing. She again felt as if something had given way inside her, followed by excruciating pain. I was out when this occurred and saw her an hour later, when I had her removed to the local hospital, where she was operated upon. On opening the abdomen it was full of blood due to recent hæmorrhage. On removing it, clots of former hæmorrhage were found, chiefly filling the right iliac fossa, and among them was an embryo attached by cord to the Fallopian tube of the left side. The patient died from collapse on the third day after the operation.

CASE 2.—The patient was a multipara, aged 45 years, and came under my care two months after the date of falling ill. In the meantime she had been under the care of another medical man, who had applied linseed-meal poultices assiduously for that time. She was supposed to be suffering from inflammation of the womb. When called in the temperature was 102° F., the pulse was 110, and the respirations were 19 per minute. The abdomen was tender and rigid; per vaginam a hard mass could be felt in Douglas's pouch. There was a history of five months' amenorrhœa, which the patient looked upon as being due to the change of life till she fell ill, when she passed some clots. I made an incision into Douglas's pouch and removed clots and a macerated fœtus of from two to three months' gestation. The pouch was packed with iodoform gauze, which I removed on the second day. The patient made an uneventful recovery.

CASE 3.—The patient was a multipara, aged 30 years, and felt something give way inside her whilst she was coughing. She had missed one period. There were tenderness and rigidity over the whole abdomen, being most marked in the right iliac fossa and over the umbilicus. The pulse was 115; the respirations were 18 and thoracic; she complained that she could not breathe. On the next day she came on unwell and passed clots and membrane; the temperature rose to 102° F., the pulse was 120, and the respirations were 18. Operation was refused. This patient has gradually improved, though there is fulness over the hypogastric region and a definite bulging in Douglas's pouch and the right lateral fornix. As she says she has passed membranes at other times when unwell, diagnosis in this case cannot be definite. But if correct, rest in her case is proving curative; it also did so in the first case till the patient got up to wash, and in the second case the patient had nothing done to her till two months after taking ill.

This brings up the question, Should cases of extra-uterine gestation be operated upon at once, or should rest be tried and abdominal section done when the acute stage has passed? American gynæcologists, I believe, hold the latter view. Personally, I believe immediate operation would save more lives than a waiting policy.

Dorchester.

SURGERY AT THE BRUSSELS EXHIBITION.—The exhibit of British surgical instruments at Brussels compares in the most gratifying manner with anything shown by other nations. It is that of only one firm, but it is sufficiently representative and attracts a good deal of attention. The German surgical exhibit contains, no doubt, ingenious and practical instruments, but what makes the evident superiority of the British installation is the high finish and the comparative lightness of the appliances which admit of more delicate manipulation. At the Brussels Exhibition Great Britain is worthily represented and the section attracts cultured visitors of every sort. Members of the profession who have friends abroad should certainly urge them to see the exhibit of Messrs. Down Bros.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

OBSTETRICAL SECTION.

Pelvic Conditions resulting from the Slighter Forms of Puerperal Sepsis.

A MEETING of this section was held on June 9th, Dr. H. MACNAUGHTON-JONES, the President, being in the chair.

Sir WILLIAM JAPP SINCLAIR read a paper upon the Pelvic Conditions resulting from the Slighter Forms of Puerperal Sepsis and their Treatment, which appears in full on p. 16 of our present issue.

Dr. HERBERT R. SPENCER said that there was no mystery about hysteropexy or Sir William Sinclair's method of performing it. It was a useful operation in certain cases of retroflexion, but, as was shown by Dr. H. Russell Andrews and others, it did not always give good results, and was sometimes followed by disaster. He had known pain to follow the operation in cases performed by himself and others. He thought on the whole that the results of shortening the round ligaments by the abdomen were preferable to stitching up the uterus, although he had known pain also after that operation. He had operated by shortening the round ligaments in a case where conception occurred a few weeks after the operation, and the pregnancy and labour pursued a normal course, and the subsequent health of the patient was excellent. He protested against the statement that "in contrast with private practice, it is alleged that morbidity is unknown in some of our lying-in hospitals." He asked Sir William Sinclair for the source of that statement, which he (the speaker) had never come across in any work he had ever read. Then, again, what was the meaning of "ovaries are dragged off their shelves"? Could Sir William Sinclair give any authority for the implication that normal ovaries were ever *on* shelves in the living body? Then, again, "No noteworthy new knowledge has been added to obstetric science and practice since the middle of the eighteenth century." He did not see the slightest use in discussing statements of this kind.

Sir F. H. CHAMPNEYS said that Sir William Sinclair's preliminary remarks apologising for the character of his paper almost disarmed criticism. He would only speak to one or two points. In the first place, he did not think that Sir William Sinclair was correct in saying that it was the habit in London to treat cases of sapræmia lightly. He believed that all teachers taught that at the onset it was impossible to be sure that a case of puerperal pyrexia was nothing but sapræmia. The point was to make certain that nothing gross was left inside the uterus, and in severe cases to remove anything remaining. If symptoms ceased on providing for the thorough evacuation of the uterus the case was one of sapræmia. Sir William Sinclair had referred to the Central Midwives Board (of which he was an original member) and to the great drawback from the survival of so many *bonâ-fide* midwives. It was not the fault of that Board that these women were on the roll; but, indeed, it was an act of justice that they should be put upon the roll, and this was in accordance with the practice of the legislature in such cases. Now this class of midwife doubtless included many who were highly undesirable, and such women were giving up practice, dying, and being eliminated by the Board in its penal sittings; but it also included women who were of great utility, and of whom local supervising authorities spoke highly. They had, it is true, to make bricks without much straw, but the bricks which they made were often uncommonly good. Sir William Sinclair had spoken rather despondingly of the progress which was being made in the care of the poor mothers of the kingdom. In this respect it might interest the section if he quoted from the Registrar-General's reports figures showing that the lives of more than 621 women were saved in 1907 which would have been lost in 1902.

Dr. E. MALINS traversed the remarks made by Sir William Sinclair as to the present lack of intelligent appreciation of their duties by midwives and nurses. He said that the contrary was his direct experience, for that since the formation of the Central Midwives Board he had noticed, both from

observation and experience as an examiner, a vast improvement.

Dr. LEWERS said that Sir William Sinclair had spoken of cases of so-called "one child sterility" associated with retroflexion. These he claimed to have cured by ventral fixation of the uterus. He had incidentally mentioned that in these cases separation of adhesions was necessary in order to restore the uterus to its normal position. Dr. Lewers thought that in the class of cases mentioned it was the adhesions more or less completely occluding the fimbriated ends of the Fallopian tubes that were the cause of the sterility rather than the retroflexion. He considered that if pregnancy followed the performance of ventral fixation in the circumstances mentioned it was to be ascribed to the separation of the adhesions interfering with the patency of Fallopian tubes rather than to the alteration of the uterus itself.

Dr. T. W. EDEN said he understood the main point of the paper to be that a great many cases of chronic pelvic inflammation and of uterine displacement were due to slight septic infection during the puerperium which had not been recognised or treated. He was quite in agreement with this view, which had been impressed upon him by his experience of gynæcological out-patient practice. But with the explanation offered by Sir William Sinclair he could not entirely agree. So far from thinking that the distinction between sapræmia and septicæmia was a source of danger, he regarded it as of great practical usefulness. And further, he thought that the work of Bumm with regard to septic endometritis in the puerperium marked a great advance in our knowledge, and justified the clinical distinction of the two varieties of uterine infection.

The PRESIDENT said that with the general trend of the conclusions come to by Sir William Sinclair as to the occurrence of certain preventable complications arising out of labour he quite agreed, but both as regards nurses and practitioners Sir William Sinclair appeared to have had a very unfortunate experience. He could not conceive that Sir William Sinclair was speaking seriously when he said that the art of midwifery had not advanced since 1750. Since that date it had been elevated into a scientific art, worthy of the place it occupied in medicine generally. They were indebted to Sir William Sinclair for having brought these practical matters before them for discussion, while he had afforded an opportunity for expression of opinion on the points that he had raised.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.—A meeting of this society was held on May 6th, Professor R. Muir, the President, being in the chair.—Sir George T. Beatson, in showing two cases illustrating the treatment of Operable and Inoperable Cancer of the Mamma, referred to the work done in the study of the mamma and its lymphatics by Heidenheim, Stiles, Handley, and others, and to the operative measures thereby shown to be necessary for the adequate removal of the gland. Case 1: A female, aged 45 years, was admitted to Western Infirmary, on June 17th, 1909, with extensive mammary scirrhus. As there seemed to be no regional or metastatic deposits, the mamma (left) was removed. Pathological report showed scirrhus carcinoma with marked involvement of lymphatic glands. The patient made a good recovery; there was no recurrence up to March, 1910, and she had very satisfactory power of movement of the left arm. Case 2: A female, aged 46 years, had her left mamma with all the axillary glands removed in February, 1907, for scirrhus. By May, 1908, small recurrences had taken place alongside the scar and the axillary glands were again involved. In June these recurrences and glands were removed. The wound healed completely. In December there was found recurrence in the portion of the pectoral muscle left after the previous operation—a mass about the size of a walnut. Above and below the clavicle were enlarged glands, and in the skin on each side of the scar were small whitish nodules. No further local treatment was considered advisable, and on Jan. 28th, 1909, both ovaries were removed. By Feb. 16th there was a marked difference in the appearance and size of the hard mass in the pectoral, and the nodules in the skin had disappeared. On March 30th the hard mass could not be felt, the scar tissue had become pliant and freely moveable, and no glandular enlargements could be made out. Examination of the patient at the meeting on May 6th showed no apparent disease. In Sir George Beatson's opinion oöphorectomy or thyroid treatment and oöphorectomy combined do not influence visceral deposits in metastasis, but undoubtedly do so in other tissues, such as lymphatic glands. It was not maintained by him that these procedures were cures, but that in certain cases they favourably controlled the disease.—Dr. J. Shaw Dunn showed Preparations from two cases of Acute Leukæmia. Case 1: A female, aged 22 years, was admitted to the Western Infirmary in June, 1907, whose chief symptoms were weakness and breathlessness, which dated from loss of blood following extraction of a tooth six months before, menorrhagia, a purpuric rash, ulceration of the gums, and diarrhœa. Temperature 99°–101° F.; spleen slightly enlarged; lymphatic glands in neck, axilla, and groin just palpable. Blood examination showed: red blood cells, 1,288,000 per cubic millimetre; hæmoglobin, 15 per cent.; colour index, 0·5; nucleated red blood cells, about 7000 per cubic millimetre (about half of which were megaloblasts and many of very embryonic type); leucocytes, 198,000 per cubic millimetre. Differential count: neutrophile polymorphs, 0·5 per cent.; neutrophile myelocytes, 1·5 per cent.; small lymphocytes, 2·5 per cent.; large mononuclear cells with basophile protoplasm, 95·5 per cent. These last, in their lack of neutrophile granules and in their possession of markedly basophile protoplasm and very indistinct nucleoli, resembled the cells described by Schulze and Pappenheim as occurring in acute myeloid leukæmia—the myeloblasts of Naegeli. The presence of these cells and of the large number of nucleated red blood cells pointed to acute myeloid leukæmia, but no necropsy could be obtained. Case 2: A male, aged 22 years, was admitted to Glasgow Royal Infirmary on May 12th, 1908, with a history of illness beginning six weeks before with shivering, and marked by weakness, headache, failure of vision, deafness, and, later, delirium; no hæmorrhages or stomatitis. Blood examination showed red blood cells, 2,953,000 per cubic millimetre; hæmoglobin, 30 per cent.; colour index, 0·5; leucocytes, 984,000 per cubic millimetre; nucleated red blood cells, scanty; a few megaloblasts. Differential count of leucocytes: neutrophile polymorphs, 0·4 per cent.; neutrophile myelocytes, 0·5 per cent.; eosinophiles, 0·05 per cent.; small lymphocytes, 0·4 per cent.; large mononuclear cells with basophile protoplasm, 99·1 per cent. These last corresponded in all respects with the classical description of large lymphocytes, possessing from one to three very distinct nucleoli and no granulations. Post-mortem examination pointed to acute myeloid leukæmia, though the blood picture suggested the lymphatic form.—Dr. Dunn showed also a specimen of Rupture of the Diaphragm, with Hernia of the Stomach and Transverse Colon, and read notes of a case of similar Rupture of the Diaphragm, with Hernia of the Liver.—Mr. Archibald Young showed specimens (with microscopic sections by Dr. Dunn) from two cases of Sarcoma. 1. Left tibia of a male, aged 60 years. At the first operation, in November, 1908, a tumour was enucleated from the tibia, microscopic examination having indicated a perithelioma, which was judged unlikely to give off metastatic tumours. The cavity filled up satisfactorily and the patient was well and able to go about freely till June, 1909, when pain, tenderness, and pulsation returned at the seat of operation and radiographs showed more extensive absorption of bone. On June 23rd a Lister-Carden amputation was performed. The patient remained well till January, 1910, when he had a hæmoptysis and was ill for several weeks. Since April he had suffered from pain in the right hip and flexion contracture of the knee, and there is now evidence that a fresh tumour is developing in the lower end of the femur, and at least a suspicion of some pelvic deposit. Microscopic sections showed that the tumour tissue in many respects resembled that of a hypernephroma. 2. Right femur of a male, aged 19 years. The first operation was exploratory and revealed a tumour of the lower end of the femur, which on microscopic examination proved to be a chondrosarcoma. Disarticulation at the hip was performed on April 4th, 1910, and the patient was allowed up 25 days later. The tumour was of the epiphyseal type, and probably a development from a cartilaginous rest.—Dr. David Dickie showed three drawings illustrative of his new method of treating pus-tubes, and showed various water-colour drawings of this condition.

MEDICO-LEGAL SOCIETY.—A meeting of this society was held on June 21st, Sir John Tweedy, the President, being in the chair.—Dr. C. A. Mercier read a paper on the Lunacy Certificate and the Liberty of the Subject. When the lunacy certificate was first instituted, he said, in 1819, the chief motive of those who prescribed its form was to safeguard the liberty of the subject. The scandal of the madhouses at that time had become notorious, and it was well-known that sane persons were detained in them who were obnoxious to their relatives. The last great reform of the Lunacy Laws in 1890 proceeded from the same motive, and was evoked by the series of actions brought by Mrs. Weldon in the early "eighties" which resulted in her obtaining heavy damages against the various defendants concerned. It would seem that that result was substantial vindication of the efficiency of the law as it then stood, but the public mind was so sensitive to any attempt to infringe the liberty of the subject that a great outcry arose for a modification of the law, and the 1890 Act was accordingly passed. Since those days a remarkable change had taken place in public sentiment on the subject. The difficulty now was not to get people under control, but to preserve some modicum of liberty. The character of amusements was settled by authority, the conditions of work in factories, in workshops, and on the farm, the age at which a public-house might be entered, and projects were continually being brought forward for restricting liberty in various directions. Habitual criminals were sentenced as such, compulsory detention of inebriates would soon be enforced, and restrictions on marriage were urged. He did not know whether this was beneficial or not, but he drew attention to the remarkable change of public sentiment which permitted restrictions on liberty seriously to be considered which less than a generation ago would have been beyond the realm of discussion. The particular point on which Mrs. Weldon gained her verdict against the two medical men who certified that she was insane was their non-compliance with the statutory requirement that the examination of each medical man should be made separately from the other. It was a little difficult to understand what was in the minds of those who inserted this provision in the Act. Presumably it was to prevent collusion between the practitioners or to prevent one of them from biassing the mind of the other in favour of the insanity of the patient. If that was the object a more futile provision was never enacted. It could only be attained by providing that the certifying practitioners should hold no communication with one another previous to certifying. It was not the practice to argue the expediency of certifying a patient in his presence, and there was nothing in the Act to prevent argument and persuasion taking place to any extent between the medical men, provided they did not make their examinations in the presence of each other. As a means of preventing collusion the provision was worthless. Also, it was not to be forgotten that if it were effectual in preventing the mind of one practitioner being influenced in favour of certifying, it would be equally effectual in influencing his mind against this course. In practice the provision is extremely inconvenient, and if it were now adhered to with the strictness required by the decision in the Weldon case it would work great injustice to the patient whom it was presumably intended to protect. When medical practitioners examined a patient they did not set themselves the problem, as the law seemed to assume, as to how they could best get the patient certified, they set themselves the problem of ascertaining what was the best thing to do for him. A patient had the right to the best examination and advice available in the circumstances. Now when one practitioner was called in by another to examine a patient the consultant was entitled to a full and complete account of the case and the patient to a full and complete consideration of his case. It was a commonplace of medical experience that such an account and such consideration could not be given unless the two practitioners conducted the examination together. Then the important question also arose as to what was meant by an examination conducted separately from another practitioner. If it was to be separate in the sense required by the decision in the Weldon case, where the two practitioners were never in Mrs. Weldon's presence together for a moment, but drove to the house together and left together, then he said with confidence that the law was continually being broken. The consultant was always introduced, and, he submitted, might always be introduced to the patient by the practitioner in charge of the case. But was it necessary in order that an examination should be conducted separately from any other practitioner that no other practitioner should be in the house during the time that the examination was being made, for that was what the judgment in the Weldon case amounted to? Suppose the patient was the wife or child of a medical man, was the husband or father to leave the house during the examination? If the patient himself was a medical man how was the examination to be conducted separately from him? If, as the judgment in the Weldon case asserted, no other practitioner was to be present in the house while an examination was proceeding, what was to be done in the case of a flat? If in such a case another practitioner might be in the same building without infringing the Act, then why might he not be in the same house? and if in the same house, why not in the same room, provided he took no part in the examination? He submitted that if he examined a patient at the Polyclinic in the presence of 30 or 40 medical practitioners that examination was conducted separately from any other practitioner if he alone performed the examination. If the Act were interpreted in that sense then there was no harm in it, but that was the utmost that could be said for it in any case; and as that particular enactment could not in any circumstances be of the slightest value to anyone, and was often productive of inconvenience, expense, and disadvantage to the patient it was presumably designed to benefit, it ought to be abolished altogether.

OXFORD MEDICAL SOCIETY. — The annual meeting of this society was held in the Radcliffe Infirmary on June 17th, Dr. James Neil, the President, being in the chair. —Mr. C. A. Coventon exhibited a young man whom he had previously shown to the society. The patient had had tuberculous abscesses from early youth and had practically never been free from discharging sinuses. A large number of operations had been performed in order to rid him of the infecting foci. In Mr. Coventon's hands the patient had been treated with vaccines of staphylococcus and streptococcus and with tuberculin T.R. This treatment had been continued for three years, and for the last six months he had been entirely free from any discharge and had been able to lead an ordinary life.—Mr. A. P. Dodds-Parker related a case that had been sent into the Radcliffe Infirmary as one of gastric ulcer. From a child the patient, a young woman, had hardly ever been free from pain in the abdomen, which at times was so bad as to make her vomit. The diagnosis was not certain, but at the urgent wish of the patient an operation was undertaken. The first thing discovered was the presence of coils of small intestine in the lesser sac of the peritoneum; a complete examination of the whole of the contents of the abdominal cavity revealed a hernia of a large portion of the small intestine through a hole in the transverse meso-colon into the lesser sac. The hernia was reduced, the hole in the meso-colon was sewn up, and the abdomen closed. The patient made an uninterrupted recovery and has remained well ever since.—Dr. H. T. Gillett read a paper on Diet in Training, in which he said: The majority of Oxford rowing men consume on the average at least 169 grammes of protein daily. This is only a rough estimate, but they probably exceed Atwater's standard of 150 grammes daily for those doing severe muscular work. Liebig taught that the oxidation of proteins was the sole source of muscular energy: hence the diet formerly consisted largely of flesh, but now carbohydrates and fats are recognised as sources of energy, so that a high protein diet is unnecessary and possibly harmful. Atwater and Bryant in their dietary studies in University boat crews estimated that the average amount of protein consumed daily was 155 grammes. They do not show that it is necessary to take so much, but they say that the diet best suited to training has not been decided upon, and varies according to the ideas of special trainers. Chittenden, on the other hand, does not follow the ideas of trainers or tradition, but proves that athletes can keep in good condition and compete favourably with others on as little as 55 grammes of protein daily for a man weighing 69·2 kilogrammes. These figures are the average for his athletes. In order to ensure nitrogenous equilibrium it may be safer to allow 1 gramme of protein for each kilogramme of bodyweight. Any excess of protein is broken down in the lining membrane of the gut; the carbonate of ammonia passes to

the liver, where it is changed to urea and so excreted. Excess of protein must mean unnecessary work for the digestion, liver, and kidneys. The purins may cause symptoms of general malaise and irritability and throw extra work on the organs of excretion. Toxæmia may result from decomposition of protein and cause a high blood pressure and consequent strain on the heart in addition to the strain due to rowing. Atwater and Bryant mention the beneficial effects of fairly large quantities of sugar in training.

Reviews and Notices of Books.

A Text-book of Medical Treatment. (Alphabetically arranged.) By WILLIAM CALWELL, M.A., M.D. R.U.I., Physician, Royal Victoria Hospital, Belfast; University Clinical Lecturer on Medicine, Queen's University, Belfast; Consulting Physician, Ulster Hospital for Women and Children, the County Antrim Infirmary, the Throne Consumptive Hospital, Belfast, the Old Charitable Institute, Belfast, &c. London: Edward Arnold. 1910. Pp. 630. Price 16*s.* net.

THIS book is a practical work of reference on the subject of the medical treatment of disease, and Dr. Calwell, in his preface, states that it is the outcome "of 20 years' experience in teaching the principles as well as the application of modern therapeutical knowledge." It bears the stamp of a wide practical experience in treatment, and although numerous authorities are quoted and references made to special forms of treatment, it is the personal note which renders this book a useful and practical work of reference. The author acknowledges his indebtedness to Dr. William Graham for the articles on insanity, to Dr. Thomas Houston for the article on vaccine therapy, to Dr. Campbell Rankin for that on electrical therapeutics, and to Mr. H. Norman Barnett for that on inebriety and State treatment for inebriates. Dr. Robert J. Ferguson has assisted in systematising the articles and in revision, but with these exceptions Dr. Calwell is responsible for the book. There is thus a continuity of character about the recommendations given which is often lacking in works of similar character but produced by the collaboration of many authors.

In spite of the title given to the book, it is rather a dictionary of treatment than a text-book, since the alphabetical arrangement precludes the systematic exposition of the principles of treatment except in so far as the diseases of a given organ or system are classed together, which is frequently done, but not invariably. The individual articles vary considerably in length, and repetition is avoided by copious cross references. The general plan adopted is to discuss preventive measures where these are practicable, to outline the general regimen and method of treatment, including diet as well as medicinal measures, and to give details of the latter, including as a rule actual prescriptions. Where different forms of treatment are practised for the same malady these are indicated, and the names of authorities recommending them are often given. As a general rule the author gives his own experience, and frequently his practical hints are good and useful. Where drug treatment is necessary the doses of the various substances advised are given, and the most satisfactory way of administering them is described. The treatment of the ordinary forms of poisoning is considered, but the accounts given are often meagre and not of the same detailed character as those of most of the other conditions dealt with. To the treatment of skin lesions Dr. Calwell devotes considerable attention, and long descriptions with several alternative methods of treatment are given for many of them; these should be very useful to the practitioner using the book for purposes of reference. The treatment of general nutritional diseases, such as gout, diabetes, and obesity, is dealt with very fully and special directions in regard to diet are given. These are in all instances explicit and definite. Pulmonary tuberculosis is considered at some length and the use of tuberculin is discussed. The recent work upon the value of graduated labour in the treatment of this condition is not referred to, although the importance of rest and exercise for patients suffering from this condition is recognised. The symptomatic treatment of pulmonary tuberculosis is also fully discussed. The various common parasites are considered, and the appropriate treatment for their removal and for the relief of the effects produced by them is given.

The articles on the treatment of insanity by Dr. Graham give a useful account of the general principles involved in the management of insane patients. In regard to the prevention of mental disease, Dr. Graham states that most authorities would agree that if we could destroy alcoholism and syphilis about 50 per cent. of insanity would disappear with them, and he urges the importance of educating public opinion in regard to these two matters. He is also strongly in favour of the establishment of out-door departments in connexion with asylums or hospitals for the treatment of patients capable of remaining at their own homes. He gives useful directions in regard to feeding insane patients, including the methods of forcible feeding, and he discusses at some length the use of hypnotic drugs. The questions of occupation, restraint, and psychic treatment are also dealt with, and brief descriptions are given of treatment appropriate to the various common forms of insanity.

Mr. Barnett's article on inebriety and the State treatment for inebriates gives a *résumé* of the various Inebriates Acts, and discusses the value of the treatment in reformatories. The subject of alcoholism in its various forms is dealt with by Dr. Calwell, and he gives careful directions in regard to the management of delirium tremens, chronic alcoholism, and dipsomania. Dr. Rankin's article on electrical therapeutics gives a short description of the various forms in which electricity is employed in treatment, with the indications for their use. An interesting description of the general principles of vaccine therapy is contributed by Dr. Houston. He closely follows the recommendations given by Sir Almroth Wright and emphasises the importance of commencing with small doses of vaccines and controlling by determination of the opsonic index. The manner of preparing the commoner vaccines is given.

Dr. Calwell's book should prove helpful to the practitioner and we can recommend it because of its practical and common-sense character. There seem to be very few omissions, though we miss mention of the medical treatment of cystitis. A few errors, such as "spinal chord" and "folie du doubts" have escaped correction, and "mixable" is an inelegant substitute for miscible.

A System of Operative Surgery by Various Authors. Edited by F. F. BURGHARD, M.S. Lond., F R C.S. Eng., Teacher of Operative Surgery in King's College, London; Surgeon to King's College Hospital, &c. In four volumes. Vol. III., pp. 764. London: Henry Frowde and Hodder and Stoughton. 1909. Price 36*s.* net per volume, or £6 for set of four volumes.

THIS the third volume of this System deals with the surgery of the ductless glands, the bile passages and the pancreas, the central nervous system, the genito-urinary organs, and the thorax and its contents, so it is seen that many and various parts of operative surgery are dealt with.

Mr. Harold J. Stiles has written on the operations for tuberculous diseases of the lymphatic glands, and he especially refers to the structures that might be possibly injured

in the various operations described. Mr. B. G. A. Moynihan and Mr. Harold Upcott have contributed the article on the surgery of the spleen. The authors declare that excision of the leukæmic spleen is totally unjustifiable, and with this opinion we concur. Mr. James Berry has supplied the section dealing with the operations on the thyroid gland. It contains as full an account of the subject as could be put in the 36 pages allotted to him, and it is clearly written.

Mr. A. W. Mayo Robson has contributed the section dealing with the operations upon the bile passages, and from his wide knowledge of this branch of surgery we have, as might have been expected, a masterly account of the subject. Mr. Mayo Robson prefers cholecystotomy to cholecystectomy for the greater number of cases of gall-stone, and in this opinion most surgeons will agree, though there is certainly a tendency in America, and to a less extent in this country, to employ the more radical operation in all possible cases. The article on the surgery of the pancreas is also from Mr. Mayo Robson's pen. The surgery of the pancreas is extremely difficult, and although every year advances our knowledge of it, it cannot be said yet that we have settled many points in connexion with it. Pancreatic cysts form practically the only morbid condition of the pancreas in which at present surgery has much to offer.

Mr. L. Bathe Rawling has dealt with the operations on the skull and brain. This is an important section and occupies nearly 100 pages. The first chapter treats of cranio-cerebral topography and forms a useful introduction to the subject. Mr. Rawling recommends that in operations on the brain the scalp and eyebrows should be shaved completely. A general description is given of the technique of cerebral operations, but we may mention that the author does not appear to be aware of the difference between a trepan and a trephine Mr. Rawling speaks strongly in favour of hand instruments in opposition to those which are driven by machinery, and we agree with him that the hand-driven instruments are much less likely to do harm. Naturally, the most interesting portion of the subject is that dealing with the operations for tumour of the brain. Mr. Rawling considers that it is almost always advisable to effect the removal of a cerebral tumour in two stages, a few days at least intervening between the two operations. This is, on the whole, the opinion held by most surgeons who have had much experience of cerebral surgery. He is also in favour of a crucial incision of the dura mater as opposed to the formation of a flap. We concur with this expression of opinion, but the statistics relating to operations for cerebral tumours are very untrustworthy, for, as he points out, as few surgeons have operated on a large number of cases it follows that most statistics are based on the results of the practice of many surgeons. And when we consider, in addition, that many unfavourable cases are never published, it is clear that the statistics cannot be trusted. It is, however, worthy of note that in Duret's collection of 400 cases more than a third died within one month. The most important point as regards prognosis in the operation for the removal of a cerebral tumour is, as Mr. Rawling puts it, accurate localisation of the growth. The chapter on the operation for internal hydrocephalus is important, as it is probable that before long the method of subdural drainage will be more widely employed.

Mr. W. Thorburn has written the article on the operations on the spinal cord and canal. He holds a somewhat pessimistic view as to the value of operations in early cases of injury to the cord. At all events, it must be confessed that in the present state of our knowledge it is but rarely that any benefit is to be expected from surgical interference in these cases. The technique of the operation of laminectomy is very fully described, and it is the most important portion of this chapter.

Dr. David Newman has written the section describing the operations on the kidneys and ureters. An excellent description is given of the mode of examining these organs. Dr. Newman does not consider that urinary segregators are trustworthy for diagnostic purposes. He looks upon catheterisation of the ureters as of more value, but he places most reliance on the cystoscopic examination of the mouths of the ureters and of their effluents. Dr. Newman in the operation of nephrolithotomy considers that it is better to make the incision through the parenchyma than through the wall of the pelvis. At present there is a little reaction against this method, for if care be taken a wound of the pelvis of the kidney heals as readily as one of the parenchyma, and it does less harm.

Mr. J. W. Thomson Walker has contributed the section on operations upon the bladder. A very good account is given of suprapubic cystotomy and the various methods of draining the bladder from above are fully described. The description of operations for ectopia vesicæ is hardly sufficiently long to be of much practical value.

Mr. P. J. Freyer has dealt with the operations for the removal of stones from the bladder. He prefers for lithotrity the handle of Bigelow's lithotrite and the blades of Thompson's. It is interesting to note that an illustration representing the performance of lateral lithotomy is taken from so old a work as Sir William Fergusson's "Operative Surgery." Mr. Freyer was also not unnaturally selected to describe the operations on the prostate, and, as might be expected, he gives a good account of prostatectomy, especially that by the suprapubic route, a subject which we discussed in a leading article in our issue of June 25th, p. 1767. He considers that the statistics relating to the comparative mortality of the suprapubic and the perineal operation are of little value, for the types of patient dealt with are, he holds, not similar.

Mr. Thomson Walker has described the operations upon the urethra. In his description of Wheelhouse's operation the surgeon is told to open the urethra to the extent of two inches. This is a quite unnecessarily extensive injury; at the most an inch is all that can possibly be required. In the excision of urethral strictures he very strongly urges the desirability of suprapubic drainage of the bladder while the urethral wound is healing, and in this opinion we fully concur.

Mr. F. F. Burghard, the editor of the work, has contributed the account of the operations on the male genital organs. The only criticism that occurs to us is with regard to a detail in the operation for the radical cure of hydrocele. We are told that after the excision of the whole of the parietal layer of the tunica vaginalis it is useful to swab over the distal layer with undiluted carbolic acid as an additional precaution against recurrence. We should be interested to know if Mr. Burghard has ever seen a recurrence after this operation for radical cure when the carbolic acid has been omitted. We consider such an addition to the operation to be absolutely unneeded.

Mr. Harold Stiles has described the operations upon the breast. We are glad to see that the author appreciates the work which Mr. W. Sampson Handley has done on the mammary lymphatics. Mr. Stiles advises the maintenance of the arm in the fully abducted position after the operation of complete excision of the breast. This position is, he maintains, a great improvement on the old method of bandaging the arm to the chest, but we consider that it is still better not to fix the arm in any way but to allow the patient to assume that position which is most comfortable.

The last article in this volume is devoted to operations

upon the thoracic wall and its contents, and it has been contributed by Mr. Rickman J. Godlee, than whom no more suitable writer could have been found. It was not possible in the 60 pages allotted to give anything like a full account of the operations on this portion of the body, but the space used has been thoroughly well employed. Mr. Godlee gives a description of Sauerbruch's chamber for operations on the chest, in which the body is under a diminished pressure, but he considers that Brauer's high-pressure method is much more practicable. He does not refer to one of the chief objections to the Sauerbruch chamber, and that is the heat and discomfort experienced by the surgeon and his assistant during the operation. The account of the operations on the heart is a little brief. We concur in the advisability of the flap Mr. Godlee advocates for exposure of the heart, that is to say, a flap with the hinge outwards.

The third volume of this System of Operative Surgery will be found of great value to all operating surgeons. It is an admirable collection of articles.

The Plant Cell: its Modifications and Vital Processes. A Manual for Students. By HAROLD A. HAIG, M.B., B.S. Lond. London: Charles Griffin and Company, Limited. Pp. 207. 1910. Price 6*s.* net.

IN the words of the author the object of this book is "to give a concise and correct idea of the principal structural elements of plant tissues; stress has been laid upon practical microscopical observations and reactions with various reagents, for these, although generally simple to perform, sometimes afford a very clear demonstration of important life-factors. A brief account has also been given of the most important chemical and physical phenomena occurring in a cell."

Compared with the best elementary text-books of botany the work leaves much to be desired. No teacher should deal with the histology of a plant without first directing the attention of his students to the gross morphology of the selected organisms. In the present instance such a consideration is lacking; indeed, the author does not appear to appreciate the difficulties inseparable from teaching, otherwise he would not have given in his introduction what is essentially a *résumé* of the anatomy of plants together with a plan to indicate "the main genealogical relationships of members of the plant kingdom." A statement regarding the phylogeny of plants is, for the student, absolutely valueless unless the evidence is first given and adequately weighed.

The author's statements are misleading in several directions. To take a few examples: On p. 49 it is written that the vascular tissues proper are "the wood and soft bast, and possibly the cambium—these tissues being functional in the conduction of sap, raw and elaborated, to and from the leaves respectively"; from this the reader will conclude that the function of the cambium is somewhat doubtful, but that there is reason to suppose that it may share with the xylem and phloem the conduction of raw or elaborated sap; it is, of course, a meristem, or, in other words, a tissue which, by the division of its cells, adds new structural elements to the xylem and phloem. Again, on p. 67 it is stated that wood-fibres "are formed by the junction end to end of several tracheides." This statement is absolutely incorrect; a fibre is formed, not by the union of tracheides, but from a cell which elongates to a considerable degree and undergoes much thickening of its walls. Further, on p. 44 it may be read that "from the starch thus built up [by the action of leucoplasts] the protoplasm is able to manufacture cellulose. ....." This is misleading; such reserve food-material is used for a variety of purposes—to supply energy, to make good waste, and to provide material for new structures; but before it can be thus utilised it must be converted into sugar.

Nuclear division is treated rather more fully than is usually the case in an elementary book, but this is not a disadvantage; it is a pity, however, that the heterotype division is dismissed in a few words; and further, when it is stated that centrosomes are in all probability absent from the higher plants, at least during ordinary vegetative divisions (p. 103), it is unfortunate that these structures should be represented in an illustration of a cell from the root tip of, presumably, such a plant.

An outstanding feature of the book is the large number of illustrations—115 text-figures in addition to several micro-photographs, the majority of which are quite good. It is a matter for regret that the shortcomings of the work render its recommendation to students extremely difficult.

Agricultural Bacteriology: A Study of the Relation of Germ Life to the Farm, with Laboratory Experiments for Students. By H. W. CONN, Ph.D., Professor of Biology at Wesleyan University; author of "Bacteria in Milk and its Products," "Practical Dairy Bacteriology," &c. Second edition, revised and enlarged. With 64 illustrations. London: Rebman, Limited. 1909. Pp. 331. Price 9*s.* net.

WHEN the first edition of this book appeared in 1901 it was reviewed in these columns[1] and regarded as opening up a new aspect of bacteriological instruction. Since then many books on similar lines have been published, the majority being of American origin. The value of scientific agriculture to the prosperity of a country is fully recognised even in England, but it is to America that we have to look for examples of financial aid from the Government for the necessary research. There the commercial value of a knowledge of scientific agriculture is appreciated, agricultural colleges and schools give it increasing attention, and all connected with the land have a strong desire to know something of the theory of farming. To meet this demand is the purpose of works such as this by Dr. Conn, and in the second edition there is a more systematic handling of the material, and an arrangement of the text into sections with bold headings so as to make it more suitable for class use. It is in pursuit of this aim, too, that suggestions for a course of elementary practical work have been added. During the decade which has elapsed since the appearance of the first edition so much new work on agricultural bacteriology has been done that the book has had to be rewritten, but notwithstanding the new matter incorporated, the second edition is both shorter than the first by 80 pages and cheaper by two shillings.

The sequence of instruction in agricultural bacteriology has become almost as stereotyped as that intended for the medical student. In the present work the subject is divided into six parts. The first deals shortly but satisfactorily with the general characters of micro-organisms and with their principal functions in the economy of nature. The second deals with the bacteria of soil and water. Attention is chiefly directed to the soil organisms, and the important subjects of nitrification and nitrogen fixation, both with and without the aid of root nodules, are dealt with. The next section concerns dairy products, and here there has been a considerable alteration by the incorporation of material from the author's work on "Practical Dairy Bacteriology." The question of milk-supply in relation to public health is dealt with in a definite and practical manner. In the following section methods for the preservation of foods and the commercial use of bacteria in various fermentative processes are considered. Part V. deals with parasitic bacteria

[1] THE LANCET, vol. ii., 1902, p. 82.

concerned with human disease and with the diseases of plants. This latter subject has grown during the last few years and receives more attention than it did in the first edition. Tuberculosis in cattle and the relation between bovine and human tuberculosis naturally form the most important part of this section on parasitic disease.

The book is of a somewhat popular character and deals with results of investigations rather than with the basis on which these results rest. It is, however, accurate, and should be of value to those for whom it is intended, and might well serve as an introduction to work at county council dairy farms and agricultural schools. The book is well printed and of attractive appearance.

LIBRARY TABLE.

The Vagrancy Problem: The Case for Measures of Restraint for Tramps, Loafers, and Unemployables, with a Study of Continental Detention Colonies and Labour Houses. By WILLIAM HARBUTT DAWSON, author of "The Evolution of Modern Germany," &c. London: P. S. King and Son. 1910. Pp. 267. Price 5*s.* net.—This book has a special interest at the present time, when the necessity for a reform in the administration of the Poor-law is being seriously considered by our legislators. The publication of the reports of the Poor-law Commission only confirmed prevalent opinion on the subject of the evils which were known to exist. And the author, who has studied the problems of public relief for the past 20 years, in England and on the continent, and who has acted as Poor-law guardian himself, offers further evidence in support of different findings of the Commissioners and suggests a scheme for the reformation of the Poor-law. His contention is that society is wholly justified in legislating the loafer out of existence, and he proceeds to justify his contention and to give examples of the kind of legislation by means of which this may be accomplished. Like the Departmental Committee on Vagrancy, he advocates prolonged disciplinary treatment; he urges the necessity for the abolition of the casual wards which, he considers, tend to encourage vagrancy, and which are certainly unsuitable for *bonâ-fide* workmen who are "on the road" looking for jobs. The Local Government Board advises the detention of vagrants for a period of 36 hours in order that they may be compelled to do a full day's work in return for their food and lodging, and suggests that the period should be extended to four nights in the case of a vagrant who has called twice within a month at the same poor-house. At present, however, there is no uniform practice to this effect. Each union acts independently, and the vagrancy question is often not treated over seriously by the various local authorities. The measures of reform which are advocated are briefly these: The transference of all measures in connexion with vagrancy from the sphere of the Poor-law to that of penal law; that loafing should be considered a misdemeanour; that certain restrictions should be placed on the right of the "pauper unemployed" to travel in search of work; that the casual wards should be closed; and lastly, that "correctional" institutions—detention colonies in the country and labour houses in the towns—should be established. Labour houses have been founded in Belgium, Holland, Germany, and Switzerland, and a detailed account of the system upon which these institutions are worked is given in this book. These houses are for the treatment of loafers by methods of vigorous restraint, and in addition to serving as reformatories, would be open to the genuine "unemployed" also. The author advises the detention of certain classes of confirmed inebriates, of husbands who desert their wives, and of "dissolute persons whose lives are an alternation of more or less regular work and spells of indulgence from which the workhouse is their only hope of recovery." To make these detention colonies serve as asylums for inebriates and persons of "inferior mental and moral capacities," as reformatories for vagrants, and as poorhouses for paupers, in addition to being places for providing work for the unemployed, seems rather a revolutionary scheme. Nevertheless, a very carefully thought-out statement of the vagrancy problem of this country is given in the pages of this interesting book, together with a full description of the continental system of labour depôts, hostels, and tramp prisons. Of recent years the tramp as a disseminator of disease has come under the notice of medical men, and the medical profession would welcome any reform which would put a stop to vagrancy with all the evils that accompany it.

Letters of a Modern Golfer to his Grandfather: Being the Correspondence of Richard Allingham, Esq. Arranged by HENRY LEACH. London: Mills and Boon. 1910. Pp. 309. Price 6*s.*—Written by a golfer, who not only plays a good game but who has made a name for himself as an authority on golfing topics, this book is a curious combination of anecdotes and practical hints on golfing, together with a love story. The hero is a young golfer—keen and a fairly good player, and in the course of the letters we hear of his visits to some of the best known links in the United Kingdom. He has golfers for his friends, and when he is not playing the game he is studying it—in fact, he is a typical example of the "Golf Fiend." He falls in love with a charming girl and subsequently golf and the lady fight for the affections of the hero. The book is amusingly written and contains some sound golfing philosophy.

The Origin of Popular Superstitions and Customs. By T. SHARPER KNOWLSON, author of "The Education of the Will," &c. London: T. Werner Laurie. 1910. Pp. 235. Price 6*s.* net.—The correct attitude of mind towards superstitions which are still operative is one not of mere condemnation but of scientific inquiry. The scientific and psychological data which may be obtained from such an inquiry are of value, as from it developments in mental science may in some cases be reached. In this book, which is not wholly a folk-lore study nor yet a scientific treatise, an attempt has been made to trace the various customs which are in vogue to-day to their origins in ancient ignorance, fear, and superstition. The author, in making a collection of facts relating to these prevalent superstitions and customs, has based his work very largely on Brand's "Popular Antiquities," and has reinvestigated—in the light of modern science—the customs mentioned in that work. Social customs relating to the keeping of various seasons and holidays are dealt with; marriage customs are fully discussed; while the subject of divination and omens occupies a quarter of the whole volume. The problem of dreams is touched upon, but the subject is neither discussed very fully nor very scientifically. The book, although not very wide in its scope, is an interesting attempt to discover the origins of the most common of our modern superstitions.

The House Fly: A Study of its Structure, Development, Bionomics, and Economy. By C. GORDON HEWITT, D.Sc., Dominion Entomologist, Ottawa, Canada, and late Lecturer in Economic Zoology in the University of Manchester. Manchester: Sherratt and Hughes. 1910. Pp. 189. Price 20*s.* net.—This volume, which is the first of a series of biological text-books published by the University of Manchester Press, contains a complete study of the Musca domestica. The papers from which the book has been compiled originally appeared as separate monographs in the *Quarterly Journal of Microscopical Science* for 1907, 1908, and 1909. Several additions on matters of practical importance in connexion with the

habits of Musca domestica have been made in the appendices. The book describes the anatomy of the fly, its breeding habits, its development and the anatomy of the larva, its bionomics, allies and parasites, and also its relationship to diseases of man. In the first appendix further observations on the dissemination of bacteria and other organisms by Musca domestica are made. The relation of flies to the summer diarrhœa of infants is discussed, and the author draws special attention to the necessity of studying the temperature curve when attempting to trace any connexion between the number of flies found in a given area and the number of cases of infantile diarrhœa. Further additions to the original monographs have been made in the paragraphs which refer to flies as contaminators of milk, while in the last appendix preventive and remedial measures with regard to the disease-carrying capabilities of this fly are considered. The book is concisely written and beautifully illustrated by coloured plates.

Travellers' Esperanto Manual of Conversation: Esperanto—English. By J. C. O'CONNOR, M.A., Ph.D. London: Marlborough and Co. 1910. Pp. 78. Price, in cloth, 1s.—Judged by the number of text-books, translations, original works, railway guides, and business catalogues, including one of an important firm of English manufacturing chemists, that are now being issued in Esperanto it would seem that the international auxiliary language is making great progress. The "Travellers' Esperanto Manual" contains a large number of classified conversational sentences alphabetically arranged under various heads, the English with Esperanto translation being placed side by side on the same page. Tables of money, weights, and measures are also included. The type is clear and the size of the book is convenient for the pocket, but from the point of view of the tourist the book possesses a fault common to several compilations of a similar kind—namely, a want of proportion in the selection of phrases. For instance, it is quite unnecessary to give three variations of the common salutation "How are you?" in Esperanto, particularly as one of these for obvious reasons will never be employed by an Englishman because of its unlucky sound. Again, there is little difference, so far as the hungry traveller is concerned, between "Can you give me some breakfast?" and "I should like some breakfast." The repetition of phrases with similar meanings only serves to increase the bulk of the book and does not help the traveller when trying to make his wants known in the "kara lingvo." The vocabulary at the end of the book will be found very useful, and we note that it contains a number of words relating to motoring, photography, and other pursuits with a large technical phraseology. The preface states that the manual is designed to enable the tourist to make his way with ease on the continent without the trouble of acquiring any other language than his own, but, of course, this is only possible when the tourist has first put himself in communication with other "samideanoj" (esperantists) at the places he intends to visit.

JOURNALS AND MAGAZINES.

Edinburgh Medical Journal.—In the June number Sir George T. Beatson writes on malignancy in tumours of the female breast and the phenomena of recurrence, which may be attributable to onset of malignant change in portions of normal tissue left behind at operation; and Mr. Alexander Miles contributes an article on the treatment of acute gonorrhœal urethritis by passive hyperæmia, induced by a suction apparatus. Mr. David M. Greig records two cases of Volkmann's ischæmic contracture, and Dr. John Ritchie one of repeated relapses in a patient suffering from cerebro-spinal meningitis, who finally recovered satisfactorily. Dr. W. B. Drummond discusses the training of school teachers in hygiene; and some remarks by the late Mr. Syme on medical education, delivered in an address before the Royal College of Surgeons in 1863, are republished as being of interest in view of the dissatisfaction generally existing with regard to the medical curriculum.

Medical Chronicle.—In the June issue Dr. R. W. Marsden discusses the diagnosis and prognosis of pulmonary tuberculosis, emphasising the importance of hæmoptysis and of slight laryngeal affection with recurring hoarseness as early signs, and that of persistent tachycardia as a grave prognostic. Dr. E. B. Leech contributes some useful notes on various continental watering places.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

(1) "WELLCOME" BRAND TUBERCULIN; AND (2) "SOLOID BILE SALT AGAR-AGAR AND SOLOID NUTRIENTS.
(BURROUGHS, WELLCOME, AND CO., SNOW-HILL BUILDINGS, LONDON, E.C.)

1. Messrs. Burroughs, Wellcome, and Co. now prepare a series of tuberculins, specimens of which have recently been submitted to us. In the new tuberculin (W), whether human or bovine, the immunising constituents of the bacilli are retained, while the materials which hinder absorption and thereby tend to bring about local irritation and induration are removed. Tuberculin (W) is standardised to contain 2 milligrammes of dry bacillary substances per cubic centimetre. Weight for weight tuberculin (W) represents approximately five times the dose of tuberculin R. New tuberculin (W) is also issued in the form of a tabloid hypodermic product. The tubercle vaccine (bacillary) is similar to Koch's bacillary emulsion. Tuberculin for von Pirquet's reaction is issued also for use in both human and bovine strains, according to the nature of the infection suspected. 2. The Soloid Brand nutrient media show that ordinary cultures can be prepared in a dried state, in which they keep in good condition, regaining their original consistency and appearance on being re-dissolved in the requisite quantity of water. These products render it possible to prepare a tube or plate of the required media within an hour without laboratory or special apparatus. As examples we have received specimens of soloid bile-salt agar-agar (MacConkey), soloid bile-salt broth, and soloid nutrient agar-agar, nutrient broth, and nutrient gelatin. All these products are prepared with extreme care in the Wellcome Physiological Research Laboratories.

(1) APRICOT LIQUEUR (PRICOTA); AND (2) CRÈME DE MENTHE.
(HUMPHREY TAYLOR AND CO., BLOOMSBURY DISTILLERY, 45, NEW OXFORD-STREET, LONDON, W.C.)

1. Pricota is described as an apricot brandy liqueur. It has the very agreeable flavour of the apricot and affords altogether a pleasant tasting liqueur. We carefully examined the preparation for injurious substances but without a positive indication. In particular we searched for traces of hydrocyanic acid, but there was not the slightest evidence of the merest trace of that poison being present. Hydrocyanic acid is said to occur in certain liqueurs in which the seeds of the fruit are used to contribute flavour. Further analysis showed that Pricota contained 31·62 per cent. by volume of alcohol, the residue on evaporation (consisting almost entirely of pure sugar) amounted to 28·98 per cent.; the mineral matter amounted to 0·08 per cent. The excellent characteristics in general of this liqueur are proof of the fact that liqueurs can be made in this country which are not in the least degree inferior in quality to those made abroad. 2. The Crème de Menthe was a brilliant green fluid having a strong peppermint flavour and odour. According to our

examination, the colour is of a harmless kind, its spectrum being identical with that of chlorophyll obtained from spinach. The alcohol amounted to 33·81 per cent. by volume, the residue on evaporation (consisting chiefly of sugar) to 36·80 per cent., and the mineral matter to 0·13 per cent. The presence of aromatic oils justifies the use of this liqueur after meals, since these oils are soothing and give the effects generally described as carminative. There was no evidence of any impurities or objectionable ingredients being present.

SALUS WATER.

(CECIL SMITH, PRINSENGADE, 2B, CHRISTIANIA, NORWAY. AGENCY: E. WIESE & CO., BALLIOL CHAMBERS, 15, STANLEY-STREET, LIVERPOOL.)

Salus water is derived from an abundant spring at the Larvik Spa, which is situated on the Norwegian coast near the entrance to the Christiania fjord. The resort has a hydropathic establishment of some repute chiefly in the treatment of urinary disorders, gout, rheumatism, and catarrh. The Salus water is slightly saline and alkaline, is very palatable and fresh to the taste, and effervesces with carbonic acid gas. According to our analysis the water contains 1·78 grammes of mineral salts per litre, consisting chiefly of sodium chloride and the carbonates of the alkaline earths and soda. According to Professor E. Poulsson the spring is decidedly radio-active. There can be little doubt that the water is of value in cases in which a course of alkaline treatment is indicated; it serves excellently also as a table beverage.

LAK-CIT MILK FOOD.

(LAK-CIT LIMITED, 9, HARROW-ROAD, PADDINGTON, LONDON, W.)

Lak-cit is a practically dry powder prepared from modified cows' milk. It shows nothing wanting in regard to each kind of nutritive material normally present in milk. Our analysis gave the following figures: moisture, 2·90 per cent.; ash, 6·00 per cent.; protein, 28·22 per cent.; fat, 24·90 per cent.; and lactose, 37·98 per cent. The fat is in a partly free state, in spite of which the preparation gives a uniform mixture when made ready for use with water. One very important property in regard to lak-cit is that the casein is not rendered into large tough clots when the solution is made acid. This, of course, is an important point in connexion with the feeding of infants. The preparation has evidently been dried by the aid of heat, since its solution did not give the Storch reaction indicating the presence of oxidase. There is present a small amount of sodium citrate, which amongst other things serves as a corrective for milk dyspepsia.

LACTO-BACTERIA TABLETS.

(JEAN STAUFFER AND CO., ENGHIEN, BELGIUM. AGENCY: HENRY A. RILES, 28, QUEEN'S-ROAD, LOWER EDMONTON, LONDON, N.)

We found these tablets satisfactorily active in producing lactic acid in milk kept at blood heat. The increase of lactic acid amounted in 24 hours to about seven times the initial acidity. After that time a complete but somewhat irregular curd was formed.

SPIROSAL.

(THE BAYER CO., LIMITED, 19, ST. DUNSTAN'S-HILL, LONDON, E.C.)

Spirosal is described as the mono-glycolic ester of salicylic acid, and, according to our experiments, salicylic acid may be readily separated from the compound molecule. Spirosal, in fact, gives, when shaken up with perchloride of iron, the characteristic violet colouration which the free acid gives when similarly treated. It is marked, however, by the important property that its application produces no irritation, as is the case with certain other salicylic preparations. Spirosal occurs as an oily, colourless fluid, slightly soluble in water, but freely soluble in alcohol, ether, and chloroform, and to the extent of 1 in 15 parts of olive oil. It is intended for external application to the affected parts in rheumatism. It is free from odour, and therefore has not the objection which on that account is sometimes taken to oil of wintergreen. It is stated that clinical experience has shown that spirosal gives an adequate therapeutic effect. For use in general spirosal is diluted with alcohol.

STOMIKE COFFEE.

(LEWIS, RUSSELL AND CO., 18 AND 20, WESTGATE, BURNLEY.)

We are not aware in what way exactly this coffee has been treated, but it certainly is excellent coffee possessing the rich genuine aroma of the carefully roasted genuine berry. With the sample of coffee we received also a specimen of a material called "waste," which is described as having been "cleaned from the coffee by our process," and the smell of which was unpleasant. It would appear from this that the coffee has been submitted to a kind of scouring process which removes dross without impairing the attractive flavour of the berry. It is conceivable that coffee so treated is more wholesome than coffee not so treated. The claim at any rate is that it is "digested coffee." In proof of the cleansing process having no deteriorating effect upon the coffee we found the amount of caffeine present to be 1·50 per cent., while the fats and oils amounted to 14·40 per cent.

New Inventions.

CONTINUOUS PROCTOCLYSIS: A DESCRIPTION OF AN APPARATUS DESIGNED FOR ITS ADMINISTRATION.

THERE are two methods of administering continuous rectal saline with which I am acquainted—(1) the form advocated by Dr. J. B. Murphy[1]; and (2) the "drop" method. The following is a description of the apparatus which I have devised for the administration of continuous rectal saline injections, with due regard to the essentials enunciated by Professor Murphy. It consists of a metal can of 1½ pints capacity, the interior of which has been prepared so that the saline solution will have no corrosive action upon it. This vessel is surrounded by a hot-water jacket; the water jacket is protected by a thick layer of non-conducting materials. The whole is enclosed in a polished metal case, which is further protected by an outer covering of thick felt. On the front of the apparatus are two glass gauges. One communicates with the interior of the saline can and is graduated in half-pints, so that the amount of saline entering the rectum can be readily estimated; the other communicates with the interior of the water jacket. By means of it the jacket can be filled accurately without spilling. The capacity of the water jacket is 7½ pints, and it is filled by means of a funnel fixed on to the top of the apparatus. It can be easily emptied by the tap shown in the illustration. The aperture of the saline tank is large enough to admit the hand, so that it can be readily cleaned after use. It is closed by a metal lid which has a rubber core in the centre. Through this core a Fahrenheit thermometer inclosed in a metal case is fixed, so that the temperature of the saline in the reservoir can be easily noted. Both the indicator and the outlet of the saline tank can be removed for cleaning. The saline leaves the can through a delivery tube of three-eighths of an inch bore; this tube is 3 feet in length and is connected to a large rubber rectal tube by a glass junction. The apparatus is suspended on an adjustable stand mounted on ball-bearing castors so that it can be readily wheeled up to the bed side. Messrs. Down Brothers showed me a stand of their own design which

[1] Perforative Peritonitis, Journal of Surgery, Gynæcology, and Obstetrics June, 1908.

can be raised or lowered by turning a handle; this is an ideal one for the proper working of this apparatus. Once it has been correctly adjusted both the saline tank and the hot-water jacket can be replenished without interfering in any way with its proper working. The temperature of the saline solution and the water required to fill the apparatus is 110° F. when used without a constriction on the delivery tube. If a constriction on the delivery tube is used both the saline solution and the water must be at 212° F., and the constriction, whether it be screw clip or forceps, should be placed as near to the outlet of the tank as possible. The saline solution can will need replenishing every hour; this is no detriment, for in my experience patients who are given continuous saline are generally so ill that they require attention more often than that. The hot water in the jacket requires to be changed about every two or three hours; in any case it is not necessary to withdraw all of it. If three pints are withdrawn and replaced with hot the temperature can by this means be adjusted to the proper level. I abandoned the idea of using an electrical heater as the means of maintaining the temperature of the saline for two reasons. Electricity is unfortunately not installed everywhere, and the expense incurred by the current required to keep the apparatus in continual use is considerable. Hot water, on the other hand, can always be obtained. I have found that the "heat loss" of this apparatus amounts to less than five degrees an hour when used by Dr. Murphy's method; if a constriction is used on the tube the loss is much greater, since both the water and the saline have to be used at a very much higher temperature. Every endeavour has been made to make this apparatus as light and as portable as possible; it has been used by many members of the surgical staff of the General Hospital, Birmingham, and has given every satisfaction.

While this apparatus was in the manufacturer's hands a description of an excellent electrically-heated saline can, designed by Mr. H. J. Paterson, appeared in THE LANCET[2] which in that direction leaves nothing to be desired.

To Messrs. Down Brothers, my thanks are due for the admirable manner in which they have carried out my instructions, to whom at the same time I am indebted for several very valuable suggestions in its manufacture.

A. E. WILSON HIRD, M.R.C.S. Eng., L.R.C.P. Lond.,
House Surgeon to the Gynæcological, Ear and Throat, and Ophthalmic Departments, General Hospital, Birmingham, and late House Surgeon to the General Hospital, Birmingham.

METROPOLITAN HOSPITAL SUNDAY FUND.

UP to Thursday morning, June 30th, about £38,000 had been received at the Mansion House, the collections at the churches generally showing an increase. Among the amounts are:—

	£	s.	d.
St. Michael's, Chester-square	721	0	0
St. Jude's, South Kensington	329	0	0
Westminster Chapel	300	0	0
St. Mark's, North Audley-street	289	0	0
St. Columba's Church of Scotland	282	0	0
St. Nicholas', Chislehurst, with St. John's Mission	266	0	0
Sir Savile Crossley, Bart.	250	0	0
Theistic Church, Swallow-street (Rev. Charles Voysey)	204	0	0
St. James's, Piccadilly	181	0	0
Holy Trinity, Tulse Hill	152	0	0
St. Margaret's, Westminster	149	0	0
St. Michael's, Paddington	137	0	0
Brompton Parish Church	132	0	0
Westminster Abbey	124	0	0
St. Peter's, Vere-street	118	0	0
Rosslyn Hill Unitarian Church	115	0	0
St. Mark's, Hamilton-terrace	109	0	0
Christ Church, Crouch End	100	0	0
St. Stephen's, Wandsworth	94	0	0
Christ Church, Chislehurst	91	0	0
Regent-square Presbyterian	90	0	0
St. John's, Kensington	82	0	0
Brompton Oratory	82	0	0
St. Simon's, Upper Chelsea	74	0	0
Immanuel, Streatham	70	0	0
St. James's, Kidbrook	70	0	0
Holy Trinity, Eltham	65	0	0
St. Anne's, Soho	63	0	0
St. Paul's, Wimbledon Park	61	0	0
Lemsford Park Church	59	0	0
St. Michael's, Blackheath	59	0	0
St. John's, Bromley	59	0	0
St. Luke's, Redcliffe-square	55	0	0
Christ Church, Lee	54	0	0
Christ Church, Beckenham	52	0	0
Robert William Edwards Trust	52	0	0
In Memoriam S.M.G.S.	50	0	0
Hornsey Parish Church, with St. George's	50	0	0
Dutch Church, Austin Friars	50	0	0
Anonymous	50	0	0
St. James's, Hatcham	50	0	0
St. John's, Putney	49	0	0
St. Matthias, Earl's Court	47	0	0
St. Augustine's, Grove Park	47	0	0
St. Stephen's, Hampstead, and Mission	47	0	0
St. Mary's, Plaistow, Kent	46	0	0
St. George's, Perry Hill	46	0	0
St. John's, Notting Hill	45	0	0
Dulwich College Chapel	44	0	0
St. Mary's, Hornsey Rise	43	0	0
St. Augustine's, Highbury	43	0	0
Holy Trinity, Upper Tooting	43	0	0
Grosvenor Chapel, South Audley-street	42	0	0
St. Peter's, Walton	41	0	0
Camden Church, Camberwell	41	0	0
Hayes Parish Church	40	0	0
St. German's, Blackheath	40	0	0
Ferme Park Baptist Chapel	39	0	0
St. Paul's, Harringay	39	0	0
Crouch Hill Presbyterian Church	38	0	0
St. John's, Hampstead	38	0	0
Bromley Congregational Church	38	0	0
Acton Parish Church and Mission	37	0	0
St. Mary's, West Kensington	37	0	0
Monken Hadley Parish Church	36	0	0
St. Andrew's, Totteridge	35	0	0
St. Mary's, All Saints' and Mission, Ealing	34	0	0
St. Paul's, Camden-square	34	0	0
Ascension, Blackheath	34	0	0
Heath-street Baptist Church, Hampstead	34	0	0
St. Paul's, Forest Hill	33	0	0
St. Peter's, Hersham	33	0	0
Battersea Parish Church and St. Mary le Park	32	0	0
St. George's, Tufnell Park	31	0	0
Pinner Parish Church	31	0	0
St. Mary, Barnes	31	0	0
St. Peter's, Fulham	30	0	0
Holy Redeemer, Stoke Newington	30	0	0
Islington Parish Church	30	0	0
Box outside Mansion House	30	0	0
St. Mark's, Surbiton	30	0	0
Westminster Cathedral	30	0	0
St. Thomas's, Telford Park	29	0	0
St. Andrew's, Whitehall Park	28	0	0
St. Andrew's, South Streatham	28	0	0
St. Andrew's, Upper Norwood	28	0	0
St. Matthew's, Redhill	27	0	0
All Saints, Leyton	27	0	0
St. Mary's, Putney	27	0	0
St. Simon's, Paddington	27	0	0
St. Andrew's, Alexandra Park	26	0	0
St. Olave's, Woodberry Down	26	0	0
Ewell Parish Church	26	0	0
St. John's, Lewisham	25	0	0
St. Paul's, Crayford	25	0	0
St. Anne's, Highgate	24	0	0
All Saints, Leyton	24	0	0
Park Chapel, Crouch End	24	0	0
St. Michael's, Stockwell	24	0	0
New Court Chapel, Tollington Park	23	0	0
St. Gabriel's, Cricklewood	23	0	0
St. Matthew's, Ealing	22	0	0
Paddington Congregational Church	22	0	0
St. Peter's, Clerkenwell	22	0	0
St. Mary Magdalene, Enfield	22	0	0
Jackson's-lane Wesleyan, Highgate	22	0	0
St. James's, Lambeth	21	0	0
Holy Trinity, South Wimbledon	21	0	0
Theydon Bois Parish Church	21	0	0
Farnborough Parish Church	21	0	0
Southwark Cathedral	21	0	0
In Memoriam Croaby Lockwood (S.L. and D.E.L.)	20	0	0

[2] THE LANCET, Oct. 9th, 1909, p. 107.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.

The usual monthly meeting of the executive committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on Friday, June 17th, Dr. F. de Havilland Hall being in the chair. The two most noticeable features of the year, so far, have been the comparatively small number of claims experienced as against the expectation, and the great increase of members wishing to secure a larger amount of sickness benefit per week. The fact that members should want to secure these larger amounts seems proof positive of their satisfaction and confidence in the society. That this is so is doubtless due to the prompt settlement of their claims and the large reserves which have been accumulated since the foundation of the society in 1884. A letter was read at this meeting from a member expressing thanks and gratification to the committee after an illness lasting 470 weeks, and for which he has received in sickness pay over £800. This is only one of many examples showing the great value of the society in cases of breakdown in health. All information as to the society can be obtained from Mr. F. Addiscott, secretary, 33, Chancery-lane, London, W.C.

THE LANCET.

LONDON: SATURDAY, JULY 2, 1910.

The Duty of the Public in Regard to the Tuberculosis Problem.

IT is now one of the most trite of commonplaces that tuberculosis is a preventable disease. It is also certain that the means of prevention are more definitely established and are more effective than the methods of cure, and yet a great majority of the public at large fail to recognise that the question of the stamping out of tuberculous disease is a matter personal to every individual, since all are, at some time or another, exposed to the risk of infection. In this matter therefore all can play a part, and it is the duty of every right-minded person to lend his aid in eradicating this devastating disease. The obligation of the medical profession to spread as widely as possible general information as to the nature of the disease, its causation and mode of spread, the conditions which favour its incidence, and those measures directed to its prevention, has been amply discharged. Opportunities are afforded almost daily for the acquisition of this necessary knowledge, and it can only be by the coöperation of the public that the crusade can be effectively carried to its destined successful conclusion. At the present time, under the auspices of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, an earnest attempt is being made to educate all classes in the country in regard to these very matters, and its efforts should command the support, pecuniary and otherwise, of all who have the general welfare at heart. The Tuberculosis Exhibition started by the association has visited Whitechapel, Chelsea, Paddington, Marylebone, Walworth, West Ham, Barking, Bermondsey, and St. Pancras in the London district, and has also been to Oxford, Cambridge, Worcester, and Liverpool. In the course of its travels it has been visited by over 200,000 persons, without counting those who saw it while it was on view at the Imperial International Exhibition at Shepherd's Bush last year. At each centre popular lectures have been delivered, conferences have been held, and demonstrations have been given to indicate the objects of the movement and to explain the exhibits. This exhibition is now at Edinburgh, where it is to be open daily free of charge until Saturday, July 9th. At the same time the National Association is holding its annual meeting at Edinburgh, this being the first occasion on which it has been held away from London.

The success which has so far attended these efforts of the National Association has encouraged it to extend its work. With the object of raising funds for purely educational purposes a special appeal committee has been appointed, with the Earl of DERBY as chairman and the Duke of DEVONSHIRE and Mr. WALDORF ASTOR as joint honorary treasurers. The committee includes the names of Professor W. OSLER (Regius Professor of Medicine at Oxford), Sir FRANCIS LAKING, Dr. ARTHUR LATHAM, Dr. D. LAWSON, Dr. H. SPITTA, Mr. H. L. WOOLLCOMBE, Miss E. MCGAW, Mr. F. W. WAREHAM, and Mr. C. H. GARLAND. It is estimated that the direct loss to the country owing to the great prevalence of tuberculosis cannot be less than three millions a year, while the total direct and indirect loss cannot be less than eight millions. Assuming the correctness of these figures, everyone will agree with the contention of the association that it would be cheaper to the individual as well as to the State to prevent the spread and continuance of this disease. The medical profession have done and are doing everything that lies in their power to stamp out the disease, but their efforts, though not without success, must fail to be efficient so long as the great body of the public remain ignorant of the rationale of prophylactic methods. The appeal committee therefore asks for a sum of £5000 annually in order that the nation may be efficiently educated by means of travelling tuberculosis exhibitions, caravans with lantern slides, popular lectures, information bureaux, and the distribution of literature. The cost of fitting out an exhibition is £500, while the expenses of such an exhibition for a year are £600; a caravan exhibition costs £300, the yearly working expenses being £700; the cost of a lecture is £5, and a set of lantern slides can be obtained for £1. The committee appeals to all persons in every walk of life to assist it in raising the amount necessary for carrying on its great work, and in order that those of very limited means may not be prevented from actively joining in the campaign it is proposed to issue books of coupons for a penny collection. It is pointed out in the circular which the committee is issuing that while tuberculosis, which is infectious, kills as many persons as small-pox, typhus fever, scarlet fever, measles, diphtheria, enteric fever, dysentery, and whooping-cough do collectively, there is no public demand for action because the public does not know what the disease means, is not conscious of the terrible losses of life and money, and has not grasped the fact that consumption and other forms of tuberculosis can be stamped out. It is to be hoped that sympathy with sickness and suffering will cause a ready response to the appeal, and what sympathy does not do economy may effect. Poor-law institutions are spending annually £1,500,000 on the relief of consumption; the demand for £5000 to spend annually in the work of prevention is a modest insurance premium.

The main problem in the combat against tuberculosis is to arouse the nation from its apathy and indifference in the matter. If such a wastage of human life were caused by a useless war or by ever recurring yet preventable accidents, if such a pecuniary drain were caused by wasteful and unnecessary taxation, the collective national common-sense would forthwith set effective measures in train to end them; but because personal hygiene seems mainly in question the public ignores the matter or regards it as one for

the attention only of the State. It must not be forgotten that no central authority acts effectively until public opinion is ripe for or demands action. The prevention of infection from person to person, and the danger of infection from bovine tuberculosis through milk, meat, cheese, and by other channels, are now clearly established. The eradication of the bovine disease from our herds is an essential preliminary to the stamping out of the human disease, and though it entails expense and perhaps some individual hardship it will have to be faced sooner or later, and the sooner public opinion demands it the better. Again, the advanced consumptive must be prevented from spreading the disease by carelessness and by neglect of elementary precautions. If to effect this certain abridgements of personal liberty have to be enforced upon some of the careless and indifferent, it is not a heavy price to pay, and in the long run this may resolve itself into the education of the patient in his duty to his fellow man. Lastly, it must not be forgotten that the public not only have a duty to perform in assisting in the prevention of this disease, but they are also under certain moral obligations to the sufferers from this disease. To treat them as if pest-stricken and avoid or ostracise them is as unnecessary as it is cruel. Fate has already hit them hard and in common humanity everything should be done to soften the blow. Much has been done in the building and endowment of sanatoriums throughout the country, but much remains to be done. The problem of the after-care of those in whom the disease is partly or entirely arrested, the finding of suitable employment, the care of the family of those disabled and of those undergoing sanatorium treatment, are all urgent; but perhaps the most difficult of all, and the one for which at present there is least provision, is the management of advanced cases. The Poor-law infirmaries take some of these, but a large number have no option but to remain at home under circumstances highly unfavourable to themselves and to their relatives. It should not be forgotten that these chronic and more or less hopeless cases do not acquire the hopeful and optimistic tone of mind which is often popularly supposed to be a characteristic of the consumptive patient. They are too often keenly conscious of their own disabilities and of the black prospect before them; they appreciate most fully not only their own sufferings but also the deprivations to which their families are subjected and the adverse conditions under which they have to live. Often their refusal by some sanatorium or chest hospital makes them realise the hopelessness of their position and deprives them of the hope they had previously nourished. Their condition under existing circumstances brings home more strongly than any other to those working among the tuberculous poor the terrible hardships entailed by this disease. We welcome most cordially any measures calculated to bring home to the public their responsibilities in regard to tuberculosis, and to educate them as to its prevention and eventual eradication. We sincerely hope that the sum now appealed for by the National Association may be forthcoming, a result which the important conference now being held in Edinburgh should help to bring about.

THE Queen is graciously pleased to become Patron of the Chelsea Hospital for Women.

The Value of Heredity.

FOR many years a contest has raged as to the relative importance of heredity and education in the production of adult qualities; by heredity being understood all those qualities and capabilities which exist at the moment of birth, and by education all those external influences which are brought to bear upon the child from the commencement of his life. During past ages very different opinions have been held as to the relative importance of these two factors in the production of the individual. At one time heredity has been looked upon as of chief importance; at another, to education have been ascribed all the qualities, whether good or bad, possessed by the adult. Until a few years ago the value of education was considered to be of far greater importance than that of heredity; then the introduction or re-discovery of Mendelism had a considerable influence in increasing the claim of heredity to be the more potent factor; and now the criticisms of Mendelism have to be taken into consideration as well as the admitted importance of some of its tenets. When we consider the welter of literature dealing with theory or fact, that already existed before Mendelism appeared, the student of heredity may well feel scared at the amount of biology, philosophy, and mathematics which he must be able to appreciate if he is to be duly equipped for the discussion of the subject. This is good in that it proves that many acute and industrious brains are working in a common direction, but unfortunate in that the busy man may be turned aside, by sheer want of time, from considering so complicated and controversial a subject.

But some consensus of opinion will have to be arrived at if we are to flatter ourselves that our educational methods are being placed upon a scientific basis. If it be true that environment has more influence than heredity in determining the qualities of the adult, then it is to education we must look for the production in the future of a race fit for the high destinies of this country. If, on the other hand, heredity determines the good or bad qualities of the man, it is to heredity we must look for providing us with a population suited to our needs. The matter is indeed of vast importance, for it affects not merely the bodily health of the community, not merely the mental capacity of the population of the future, but the most important moral questions must depend upon a correct solution of this difficult problem. To every thinking man it will be clear that there is something to be said on both sides, but it is difficult indeed to determine how much should be credited to heredity and how much put to the account of training, though to the superficial politician the matter may seem simple. Education is credited by him with powers which unfortunately are altogether beyond it, and this belief in education is having at present, and in the future will assuredly have still more, influence on the legislation of this country. It behoves all who care for the welfare of the future population to weigh well the arguments brought forward by both sides of this controversy and to endeavour to come to a correct conclusion on the matter. That heredity has some influence

no one can doubt. Who can feel surprised that the son resembles his father? We all endeavour to trace in the daughter the lineaments of her mother. We are astonished if in a child qualities, whether of mind or body, manifest themselves which we have not known in his progenitors. If any trick or mannerism appears in a child we, even involuntarily, cast back and search for it in his ancestors. Should any abnormality of body exist—a hare-lip, a club-foot, a tuft of differently coloured hair—we are satisfied at once if we know that some similar abnormality, some such malformation, has occurred in the family of the father or mother. No fact is more certain, more strongly impressed on our minds, than that a tendency exists for a child to exhibit the physical, psychical, and ethical tendencies of his forbears. And this is an opinion not merely founded on popular prejudice, not merely the outcome of tradition, but an opinion strengthened, confirmed, and consolidated by the most careful statistical examinations of the histories of families, and little, if at all, weakened by the fact that as our pathology improves we have to take more and more particular diseases out of the directly hereditary category. The tendency of like to produce like is founded on fact. The more we examine into the records of families, the more carefully we investigate the histories which have been collected, with much cost of time and labour, the more we are assured that it is difficult to over-estimate the importance of heredity as a factor in the production of the race.

What, then, is to be said for education? What arguments can be brought forward which will establish its importance? Here, again, experience speaks with no uncertain voice. Education can do much. Many a puny child of the slums can by means of judicious feeding attain the stature and the build of the country child. The mind may be directed so that he who in the environment in which he is born would have developed into an uneducated member of the proletariat may become a man of letters or of science. He who would have readily developed into a criminal, a danger and an expense to the community, may often by due training develop into the benefactor of his race. From this point of view education appears to be everything and heredity nothing. Where shall we find the solution to this difficult problem? It is to be found in a careful consideration of the natural tendencies of the individual, and an examination of the possibilities of the child. We have no reason for thinking that the problem is in any way different, whether the body, the intellect, or the morals of the child are concerned. But it is undoubtedly easier to recognise deviations from the normal or from the desirable in the case of the body than in the case of the other qualities of a man. When we consider an individual case we see at once that children at birth do not start level in the race of life. Some of this difference, it is true, may be ascribed to the health of the mother before the birth of the child. Lack of food and excess of work during pregnancy cannot fail to influence for harm the unborn child, but the importance of these matters may easily be overrated, and even when we make full allowance for them we cannot fail to see that there is an innate difference between children at the moment of birth. The puny infant is not always the offspring of a badly-fed mother. No; we must look for the explanation of the differences which exist, not merely to the parents or to the grandparents, but to any of those further back in the genealogical table of the child for an explanation of its condition when first it comes into the world. There is no small danger to the community in the perpetuation of unsatisfactory strains, and in time to come it may be recognised how undesirable is the propagation of tainted individuals, whether the taint be physical, mental, or moral; but the present danger is certainly that we should generalise too largely upon facts hastily gathered or not gathered under comparable circumstances. The medical inspection of school children may place many problems in a more favourable situation for solution, and in this piece of legislation we have just the blend of general and individual investigation that ought to give trustworthy results.

Children under the Poor-law.

A CIRCULAR issued to boards of guardians by the Local Government Board, dated June 16th, is evidence of the intention of the central authority that the report of the Poor-law Commission shall not be without effect, even though the "breaking up of the Poor-law" may be postponed until, let us say, a more convenient time. It is also felt, no doubt, in official circles that, under the stimulus of the attention directed towards them by the report, guardians will be ready to demonstrate their capacity for adoption of, and perseverance in, improved methods, and that until the old system has been given a fair trial under modern conditions, and has failed to stand the test, it may be unwise to initiate a new one. At the time when the Poor-law Medical Officers' Association is actually holding its annual meeting a widespread feeling of this sort is not without significance.

The circular in question is confined to recommendations as to the treatment of children under the Poor-law, and in order that its recipients may understand fully the nature of the movement in which they are asked to take part convenient charts are appended showing the development of the various methods now in use for the disposal of children who are directly under the care of the unions, as distinguished from those in receipt of outdoor relief. It is pointed out with regard to both classes in an early paragraph that the object to be kept in view is the bringing up of the children to independence of character and habits of industry, and that in the care of the children lies the most responsible and at the same time the most hopeful work of the guardians. With regard to those children to whom out-relief is given closer supervision is advised than has been the case in most unions, involving, if necessary, the employment of additional officers and particularly of women as visitors or assistant relieving officers; while it is pointed out that valuable information as to the welfare of children of this class may be obtained through the medical examination of those attending public elementary schools. As the medical inspection of school children has been delegated by the Board of Education to the sanitary authorities we have in this suggestion a practical proof that the linking up of the existing Poor-law with other branches of public service can

be effected. The guardians are also advised to obtain, whenever it is desirable to do so, special reports with regard to individual children from their own Poor-law medical officer, paying to such officers a special fee when they are not attending a child in the course of their ordinary duties. It is mentioned that by arrangement reports should also be obtainable as to school progress from officers of the local education authority, and that in the case of the children being in need of medical treatment removal to a Poor-law infirmary may be desirable, or the exercise of the guardians' power to send a child to a particular institution such as their medical officer may recommend. The children who are not simply the subject of outdoor relief constitute a smaller class than those who are, and with regard to them, as is well known, the methods employed have altered considerably in the last half century. The report of the Royal Commission has recently recommended "that effective steps should be taken to secure that the maintenance of children in the workhouse be no longer recognised as a legitimate way of dealing with them," and the Local Government Board is emphatic in its request that in all cases suitable provision for children should be found outside the workhouse. The condition required here is not a new one; it already prevails in the majority of cases, and it is only urged that it should be rendered universal. The proportion of children maintained in workhouses has diminished (as one of the charts referred to shows) from over 80 per cent. in 1860–65 to less than 60 per cent. in 1890–95, and has since been reduced to a little over 35 per cent. in 1908, or 30 per cent. if children under three years of age are omitted, whose removal is not necessarily advantageous.

Attention is called to the need for the exercise of special care in the case of those under three years of age who, if it is not desired to separate them altogether from their mothers, must be kept in workhouse nurseries; and boards of guardians are reminded that the staff of the Local Government Board includes lady inspectors who are qualified nurses and whose advice will be available if the guardians should require it. With reference to the disposal of children of an age to be maintained outside the workhouse the Local Government Board adopts the opinions expressed by the Royal Commission, or rather points out that the Commissioners have endorsed the policy which the Board has inculcated and maintained. It declines to express any marked preference for the employment of district schools, scattered homes, grouped cottages, or boarding out, and quotes the views of the Royal Commission that "the truth lies with those who hold that more depends upon the administration than upon the system." This, indeed, may be said to constitute the main principle underlying the whole of the advice contained in the document under comment, a principle the soundness of which is beyond question. The machinery which the guardians have at hand is reasonably efficient for the performance of a task which all admit to be difficult and in which failure in any number of instances may easily be achieved. Careful administration, constant and effective inspection, unremitting attention and zealous coöperation of all employed are necessary if good results are to be attained with any degree of regularity. We have used the word machinery for lack of a better one, but parents with children receiving outdoor relief and those who have the care of the children of others in and out of workhouses are, in fact, no more machines than are the children themselves, and the fact of liability to vigilant inspection has quite a different effect in keeping their work "up to the mark" than is the case with "machines." Guardians, however, are in most cases as little wishful to waste the money of the ratepayers as they would be if it were their own; they are anxious to be useful and to demonstrate their usefulness, and they will no doubt loyally follow the advice given by the central authority. That authority at the conclusion of the circular referred to points to certain statistics of good results achieved in the education of children under the Poor-law in the metropolis, and claims that they fully justify the continued effort and the zealous care which the guardians and their officers have bestowed upon this most important and interesting branch of their work.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE medical profession is well represented in the list of honours issued on the day set apart for the celebration of his late Majesty's birthday. One new medical Peer has been created, one Baronet, eight Knights, two Companions of the Bath, one Companion of the Star of India, one Companion of the Indian Empire, and one Companion of the Order of St. Michael and St. George, while the Kaisar-i-Hind Gold Medal has also been conferred upon two members of the medical profession. The Right Hon. Sir Walter Foster, who receives a peerage, is so well known in the world of general and medical politics that it seems almost unnecessary to recapitulate his claims to a seat in our hereditary senate. He was for nearly a quarter of a century professor of medicine in Queen's College, Birmingham; was for many years a Direct Representative of the profession on the General Medical Council; has been a powerful voice in the administration of the British Medical Association. On entering Parliament he was a practical success from the beginning of his career. For three years he acted as Parliamentary Secretary to the Local Government Board, and in that capacity proved himself an efficient public servant. Made a Privy Councillor at the beginning of Sir Henry Campbell-Bannerman's administration, he continued to sit in Parliament as an active Liberal. He recently resigned his safe seat for the Ilkeston Division of Derbyshire, and the honour which has been done him by his Sovereign was fully expected. Dr. Francis Henry Champneys, who has been made a Baronet, is the chairman of the Central Midwives Board, on which body he has sat continuously since its creation. His distinguished work in obstetric medicine is well known, while he is lecturer on midwifery and diseases of women and children and physician-accoucheur to St. Bartholomew's Hospital, his original school, having previously held the same posts at St. George's Hospital. Among the list of Knights is the name of Dr. Arthur Henry Downes, the Senior Medical Inspector for Poor-law Purposes to the Local Government Board, and his honour has been won by strenuous and devoted work. As the only medical man on the recent Royal Commission on the Poor-law, he showed in a practical way, by an independent memorandum, that he appreciated the tremendous importance of the issues involved alike from the public, the departmental, and the professional view.

Knighthoods have also been bestowed upon Mr. John Fagan, consulting surgeon to the Belfast Royal Hospital and to the Belfast Hospital for Sick Children, who was for many years inspector of reformatory and industrial schools for Ireland; Dr. George Hastings, a well-known West-end practitioner; Dr. Henry Simpson Lunn, one of the great pioneers of continental travel; Dr. David Caldwell McVail, Crown member for Scotland of the General Medical Council and an authority on medical politics and education; and Dr. Robert Michael Simon, physician to the Birmingham General Hospital. Surgeon-Lieutenant-Colonel Warren Roland Crooke-Lawless, C.I.E. (Coldstream Guards), surgeon to His Excellency the Viceroy of India, has also been made a Knight. Inspector-General of Hospitals and Fleets James Porter, C.B., Director-General of the Medical Department of the Royal Navy and honorary physician to the King, has been promoted to a Knight Commandership of the Order of the Bath; and Surgeon-General Arthur Thomas Sloggett, A.M.S., C.M.G., Principal Medical Officer in India, and Surgeon-General Owen Edward Pennefather Lloyd, R.A.M.C., V.C., Principal Medical Officer in South Africa, have been made Companions of the same Order. Surgeon-General Charles Pardey Lukis, Honorary Surgeon to the Viceroy of India, Director-General of the Indian Medical Service, and an additional member of the Council of the Governor-General of India for making laws and regulations, has received a Companionship of the Order of the Star of India; and Dr. Aubrey Dallas Percival Hodges, Principal Medical Officer in the Uganda Protectorate, has received a Companionship of the Order of St. Michael and St. George in recognition of his services in the suppression of sleeping sickness. Colonel Roderick Macrae, I.M.S., lately Inspector-General of Civil Hospitals in Bengal, has received a Companionship of the Order of the Indian Empire; and Captain Robert McCarrison, I.M.S., Agency Surgeon at Gilgit, and Dr. Theodore Leighton Pennell, medical missionary at Bannu, North-West Frontier Province, have received the Gold Medal of the Kaisar-i-Hind. The list also includes the names of Colonel Andrew Clark, administrative medical officer of the 2nd London Division of the Territorial Force, and of Colonel Joseph Whitfield Blandford, administrative medical officer of the Northumberland Division of the Territorial Force, who have been respectively appointed surgeon and physician to the King. In the name of the profession we congratulate these gentlemen upon the well-deserved honours which they have received.

THE UNWASHED STRAWBERRY.

FRESHLY peeled fruits are probably aseptic, and in this category may be included such familiar examples as the apple, pear, peach, apricot, orange, and banana. The peel in these instances has obviously no part in the dietetic quality of the fruit, and few persons, we imagine, are tempted to consume the protective coating; it has no attractive flavour, and it is commonly tough and indigestible. The strawberry, however, has no shield in the shape of a peel, and it would be very surprising if the fruit as it reaches the consumer was free from external taint, considering that it is peculiarly liable to contamination. It matters little under what conditions the banana or the orange is picked and packed, because before these fruits are consumed they are skinned and hence the impurities due to handling or to insanitary packing or environment are, to a great extent, removed with the peel, though we say this with reservations. The strawberry flourishes in a "bed"; it is within splashing distance of the fertilisers used to encourage its growth and maturity; it is picked by hands not necessarily under sanitary control; and, lastly, in transit it may easily encounter surroundings which need no bacteriological proof to show them as hygienically objectionable. The strawberry should certainly be washed; the process is simple and need not in recognisable degree detract from the highly esteemed characteristics of the fruit, while the small attention which washing involves may likely enough reap a great reward in averting a disaster to health. This injunction is not so absurd or superfluous as some may think, when it is considered how liable the strawberry is to contamination. Most cleanly disposed people if they visited the strawberry fields in full process of picking would soon regard the washing of the strawberry before it came to the table or before they consumed it as imperative. Apart from the questionable cleanliness of the picker's person, it has to be remembered that the surface of the fruit is liable to be sticky, and therefore to hold on to any impurity with which it may come into contact. Further, the strawberry's exterior, in bacteriological parlance, affords an excellent nutritive or culture medium for organisms. "Never eat an unwashed strawberry" is therefore neither absurd nor unsound counsel, and those who think that to subject the fruit to such treatment would spoil its flavour are invited now, while strawberries are cheap and plentiful, to make the experiment.

"INFANT CONSULTATIONS."

IN the issue of the *Nation* for June 10th there appears an article from the pen of Dr. H. Ronald Carter which draws timely attention to the social and economic advantages of "infant consultations" as instruments for combating infant mortality. During recent years the spread of these institutions throughout London and the provinces is a hopeful indication that the public conscience has at last been aroused to a due sense of the importance of this national question. Following closely on Mr. Benjamin Broadbent's pioneer experiment in Huddersfield for the encouragement of careful motherhood, the St. Marylebone Health Society organised in the year 1906 a very complete system for the instruction of mothers and the care of infants. This system was a combination of official and voluntary service fulfilling, in fact, the desiderata since formulated for such institutions by Mrs. Sidney Webb—namely, "voluntary work in a municipal setting." On the executive committee of the St. Marylebone Society are lay, medical, and clerical representatives of all the local charitable and philanthropic institutions for the care of the sick and the tending of infants. The medical officer of health is the chairman of the society, and the official sanitary inspectors—all ladies, and now three in number—act hand-in-hand with the voluntary health visitors. All infants born in the district whose circumstances demand outside assistance are called upon at an early date by one of these officials, and in some cases expectant mothers are visited by voluntary workers and instructed in the more important details of infant management before the birth of the child. The cases are subsequently classified, and according to their needs referred to the supervision of voluntary health workers or to the more efficient medical service of the "infant consultations" which are worked in connexion with the society. These "consultations," which were the first of their kind in this country, were founded by Dr. Eric Pritchard at the St. Marylebone Dispensary in Welbeck-street in the year 1906, and the lines on which they have been run have proved so satisfactory and inexpensive that they have served as a model for the many institutions of a similar kind which have subsequently sprung up. Additional "consultations" were almost immediately started in North Marylebone in a modified form, in St. Pancras under the title of the "St. Pancras School for Mothers," in Birmingham as an Infants' Health Society,

in Kensington, Stepney, Greenwich, and at a dozen other important centres under various names. As supplementary to official inspection and voluntary home visiting the value of these "consultations" can hardly be exaggerated; the misfortune, however, is that fuller advantage is not taken of the opportunities they afford for the instruction of a larger number of better-class women, who might thus learn much that would subsequently prove of use to them if not in a public capacity at least in the bringing up of their own families. The economic side of these institutions is well worth consideration. Dr. Carter tells us that the whole cost of the "Consultations" in North Kensington, which provided for the instruction of 158 mothers in the year 1908 and of 138 mothers in 1909, could be covered by the annual expenditure of a ten-pound note, while the cost to the Health Society of instructing 1000 mothers in St. Marylebone has been in all very little more than £60; in fact, at the present time the expenses of the "consultations" at the St. Marylebone Dispensary lay no additional burden on this charity, for they are now self-supporting. The St. Pancras School for Mothers, which in addition to the "infant consultations" has several other departments, was maintained in the first year at a cost of £269, and in the third year at a cost of £580. The Birmingham society spent £105 during its first year in dealing with 204 new cases, and £91 during the year 1909 in dealing with 353 cases. It is probable that we have only seen the beginning of the development of this efficient and economical system for meeting an unnecessarily high infant mortality, and much is to be expected from the foundation of the new Society of Officers of "Infant Consultations" which recently held its first meeting in London at the St. Marylebone General Dispensary. The objects of this society are to promote the extension and efficiency of such institutions, the collection and exchange of statistical material, and the comparison of results and methods of infant feeding. The first general meeting will be held in October next, and honorary secretaries, to whom communications may be addressed, are Dr. H. Ronald Carter (11, Leonard-place, Kensington, W.), and Dr. J. Claypon (the Belgrave Hospital for Children). In connexion with the uses to which "infant consultations" may be advantageously applied, it may be mentioned that an interesting experiment is to be tried shortly in Hackney; this experiment is an attempt to combine under one roof in one of the poorest parts of the district an "infant consultation," a day nursery, a training home for domestic nurses, and a school for mothers. This comprehensive project, which is due to the efforts of the Woman's Industrial Association, is deserving of the fullest support, and will be watched with interest by all those engaged in solving the many problems connected with preventable infant mortality.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

AMONG the many interesting papers and discussions at the recent annual meeting of the Canadian Medical Association at Toronto, by no means the least interesting was the discussion opened by Dr. S. P. Beebe of New York on exophthalmic goitre.[1] The diversity of opinions on every point connected with this disease is so great that it is not surprising that it appears to be vain to seek for unanimity in treatment. Although it is by many admitted that exophthalmic goitre is probably the result of an excessive or abnormal secretion of the thyroid gland, there are still many who consider that the disease is entirely nervous in origin. The very name of the disease varies in different countries, but fortunately the descriptive title of exophthalmic goitre is steadily gaining ground. No little doubt seems to exist as to the exact definition of the disease. While some insist on the presence of the three cardinal symptoms—enlargement of the thyroid, protrusion of the eyes, and increased rapidity of the pulse—others are content to include under the name of exophthalmic goitre cases which exhibit only two of these signs, or even only one. The results of treatment cannot satisfactorily be compared if differences of opinion exist as to the cases that are to be included in the disease, and this is of particular importance when the effects of surgical treatment are considered. The rapidly fatal result which has followed in some cases of excision for Graves's disease is very remarkable whatever may be its explanation, and many surgeons hesitate to incur the risk of such a result unless the condition of the patient is very severe. Dr. F. Shepherd of Montreal considered that surgeons should undertake the treatment of exophthalmic goitre at an early stage of the disease, as these cases are then much more amenable to surgical treatment. Those surgeons who include cases where the signs are not well marked or even absent are much more in favour of operative treatment than are those who limit the name of exophthalmic goitre to those cases where all the cardinal signs are to be observed. The discussion at Toronto was undoubtedly very instructive and formed a material addition to our knowledge of the current opinion on many points connected with this disease.

[1] THE LANCET, June 25th, 1910, p. 1787.

THE GERMAN MEDICAL CENSUS.

IN accordance with a decision passed by the Federal Council in April last year a general census of the entire *personnel* of the medical and sanitary services in the German Empire was taken on May 1st, 1909. A preliminary report of the result obtained has now been published by the Imperial Board of Health, to which has fallen the task of compiling the material collected. The preceding census of this nature took place on April 1st, 1898, and in the following *résumé* the figures in parentheses refer to the census of 1898. The total number of qualified medical men in the German Empire was found to amount to 30,558 (24,725). Of these 211 were homœopathic doctors, against 240 in 1898. No less than 5912 specialists were returned, of which the majority, 4146, dealt solely with their own special branch of medicine, whereas 1766 also attended to general practice. Women doctors numbered 85, 33 of whom were engaged solely in institutes. Unqualified persons dealing with the professional treatment of sick persons were found to number 4468 (3059); among the 3146 male persons of this class were 40 physicians with foreign qualifications, and of the 1322 females 14 were qualified outside the German Empire. Qualified dental surgeons numbered 2667, which means about double the number returned in 1898—viz., 1299. The same increase was also observed in the case of the unqualified dentists, the number of which has arisen from 4376 to 8546. As regards the midwives their number shows but a slight increase—from 37,025 in 1898 to 37,736 in 1909; this means 5·94 to every 10,000 inhabitants; the proportion has dropped from 6·83 per 10,000 souls, the figure for 1898. On an average every German midwife attends to 54·8 births; curiously enough, the same average as existed at the time of the previous census. But the greatest increase is to be found in the ranks of persons who professionally in some capacity or another attend to the sick. In 1898 this class was represented by 29,577 persons, or 5·46 per 10,000 of the population, whereas now it embraces 68,818 persons, or 10·83 per 10,000 of the empire's population. The increase in the male element is very striking, the sexes being represented as follows: male, 12,881 (3150); female, 55,937

(26,427); formerly to every male nurse there were 8·39 female nurses in 1898, whereas now the number has fallen to 4·34. On the other hand, the proportion alters when we consider their relative spheres of occupation: of the 20,026 persons of the above class not engaged solely in nursing work in hospitals and similar institutes, only 897 were males and 19,129 females, while the remainder, 48,792, were engaged in some sort of institution. The census also included a return of masseurs and of persons engaged in disinfection work. The masseurs numbered 1498, the masseuses 1723, out of a total of 14,789 persons engaged in work of the above nature. As the question of limiting dispensing to pharmacists, as in Germany and elsewhere on the Continent, is occasionally broached in Great Britain, it is interesting to learn that there is in Germany very nearly one pharmacy (exactly 0·96) for every 10,000 inhabitants, the total, including branch establishments, being 6127. The increase in the population of the German Empire is, indeed, very plainly reflected in the increase of pharmacies, which are only concessioned to keep pace with the growing population, for in 1895 there were 966 less than in 1909. To the above number must be added 587 (533) dispensaries belonging to general practitioners, who obtain this right in the event of the nearest pharmacy being some considerable distance away, the population being not sufficient to warrant even the establishment of a branch.

PATHOLOGICAL FUNNY FELLOWS.

Jack Spratt, Hans Wurst, Pickel Herringe, who is a Dutchman, and a host of others like them are all fictive creatures more or less noted for gluttony and obesity, but pathology plays no part in their characteristics. Hans Trapp or Drabb is rather sinister and John Bull not very bright of understanding, but neither is the victim of disease, though John is certainly rather huge in girth. It has been left to the modern Italians, the compatriots of Lombroso, to evolve Cretinetti, who figures in kinematograph shows as "Foolshead." This creation of the modern Italian folk-mind is far from pleasant and furnishes food for thought. His antics are mostly brutish, often malevolent, and just such as one would expect from a myxœdematous subject. We trust his vogue will not spread among the Latin nations. Nor would it be necessary to mention him here were we not being perpetually confronted by sensational stories of Italian degeneracy, some of which were detailed in a recent contribution to THE LANCET on the subject of epileptic outbreaks among soldiers. Cretinetti is a species of scientific conception, while Hans Wurst and the rest of the northerners belong to the realm of ancient folklore and are probably descended from early Scandinavian demigods such as Loki. Cretinetti belongs to the family of Punch, himself an Italian, and a heartless and murderous hunchback in puppet shows, though not in literature. For Punchinello, now at any rate, shares the glamour of the Scandinavians and is bathed in their aura. He has long ago outlived his deformities. In England he is the soul of honour as represented in the pages of his own journal. It would be interesting to note all the Punches and Jack Spratts of all nations. They throw light on national habits and character. The Chinese must possess some delightful creatures of this kind. Here and there, there are local ones, some of whom are pathetic, almost tragic. Such an one is the Alsatian Hans im Schnogeloch, Hans of the Gnat-swamp, a district near Strasburg. This Hans, a man of substance and fine physique, to judge of him by Theophile Schuler's well-known picture, was devoured by a spirit of discontent, which drove him over-seas and brought him back, after shipwreck, to die in poverty where before he had lived in comfort. He personifies the spirit of a little nation doomed to a restless unhappiness. The Irish should be able to parallel him. Hans, without doubt, had a bee in his bonnet, but we prefer him to Cretinetti, and are almost inclined to rank him in the family of Saul of Israel. In the Isle of Wight, again, there are Sal Hatch and Kit Mullett, the latter a lady of weak intellect and boundless immodesty, who showed her "b—m to a dead robin, and cried because he would not look at it." Every countryside, indeed, must have its Hans or its Sal. These types attain their apotheosis in the glorious Wise Men of Gotham, whose illogicality was such as to qualify them for a lunatic asylum had such institutions existed among our Saxon forefathers. Their descendants' name is legion.

THE AMENDMENT OF THE MIDWIVES ACT AND THE SOCIETY OF APOTHECARIES OF LONDON.

THE Society of Apothecaries has addressed a memorial to the Lord President of the Council upon the subject of the Midwives Bill, 1910, drawing attention to various points in the Bill which, it is suggested, stand in need of amendment. It is in the first place urged that, before the Privy Council takes any effective action in reference to abolishing the power of appointment of a representative on the Midwives Board by any body or person, the body or person in question should have the right of being heard on the matter before the Council by counsel and witnesses if necessary. It is further suggested that payment of the travelling expenses of the members of the Board should be made obligatory, and, in fact, assimilated to the similar provisions in the Medical Act, 1858. In Clause 8 of the Bill, containing provisions as to the suspension of midwives, the Society has suggested a clearer definition of the powers of the local supervising authority with a view to obtain unity of practice throughout the country. The Society further recommends that Clause 11, which provides for notification of birth by a midwife who has not given to the local supervising authority the notice provided by Section 10 of the Midwives Act, 1902, and where a medical practitioner is not present at the birth, should be omitted. In Clause 17, dealing with the payment by the guardians of fees of medical practitioners called in on the advice of midwives, the Society has urged that payment should be made to the practitioner not only where he attends the mother but where in case of urgency the newly-born child requires medical assistance—a most important addition.

DEATH FROM INJECTION OF COCAINE INTO THE URETHRA.

SEVERAL cases of death after the injection of cocaine into the urethra in ordinary doses for the production of anæsthesia have been recorded. The rules for this procedure, therefore, appear to require revision or some safer drug should be used. The latest case is recorded in the *Journal of the Royal Army Medical Corps* for May by Captain A. D. Jameson, R.A.M.C. A soldier had a urethral fistula secondary to a stricture 3 inches distant from the meatus. An attempt was made to dilate the stricture with metal bougies, but it was found to be very sensitive. Four days later another attempt was made to pass a bougie after injecting into the urethra a little of a 10 per cent. solution of cocaine, the urethra being compressed between the finger and thumb behind the stricture. The solution of cocaine was not retained, but allowed to escape when the syringe was removed. After five minutes the stricture was found to be still sensitive, and more cocaine was injected in the same manner. Three minutes later, while the stricture was being dilated, the patient's colour was noticed to be very bad, and a convulsion lasting half a

minute occurred. The pupils were widely dilated, the pulse was imperceptible, and the forehead was covered with sweat. Artificial respiration was commenced, strychnine and brandy were injected, and an electric battery was used, but the patient never rallied. The necropsy showed nothing important except a few cauliflower vegetations on the mitral valve, which, however, acted perfectly. The solution of cocaine had been in use for a fortnight. The amount retained in the urethra must have been very small, as when the pressure was removed after an injection its walls came together again and the fluid was expelled. In Dr. Dixon Mann's "Forensic Medicine" two cases are quoted of sudden death from injection into the urethra of a drachm and 20 minims respectively of a 4 per cent. solution of cocaine. However, these were the only fatal cases in a series of several thousands. In another case recently recorded in this country death occurred after the injection of 30 minims of a 10 per cent. solution of cocaine. Three cases of dangerous symptoms after the injection of 20 minims of a 10 per cent. solution have also been reported. Most authorities say that a 20 per cent. solution of cocaine may be swabbed on a mucous membrane, and in Caird and Cathcart's "Surgical Handbook" it is stated that 2 drachms of a 5 per cent. solution may be injected into the urethra with safety. Captain Jameson refers to another case mentioned to him by a brother officer in which death followed the introduction of a small amount of a 10 per cent. solution into the urethra to facilitate the use of the urethroscope. But although he has for years been in the habit of applying a 10 per cent. solution of cocaine to mucous membranes for small operations he has never before seen any toxic effects.

ANNUAL EXHIBITION AT THE ROYAL OLLEGE OF SURGEONS OF ENGLAND.

FOR many years past it has been customary to place the specimens recently added to the Museum of the Royal College of Surgeons of England on exhibition during the election to the Council. This year the election falls on Thursday, July 7th, on which day and on Friday, the 8th (from 10 to 5), and on Saturday, the 9th (from 10 to 1), these specimens will be open for inspection. Visitors will find the exhibition for the present year well worth a visit. The specimens, some 350 in number, give a concrete representation of the various lines of investigation which are now being pursued by medical men. Particular attention has been paid to the addition of specimens which illustrate general pathological processes—hypertrophy, atrophy, degeneration, necrosis, repair, inflammation, and infective diseases—because the section of the Museum in which these specimens will be placed, that of general pathology, is at present being greatly extended. Those interested in the evolution of surgical instruments will have an opportunity of examining the outfits of Chinese, Japanese, and Fijian surgeons, as well as surgical needles used by John Hunter, a surgical cabinet made by Sir William Ferguson, and outfits of resuscitation instruments used at the end of the eighteenth and beginning of the nineteenth centuries. The additions to the teratological series are chiefly illustrative of human malformations, and include a remarkable series from Egypt illustrating irregularities in the union of the atlas to the skull. These were presented by Professor Elliot Smith. Dissections have been added to illustrate the condition of the Wolffian remnants in the broad ligament at various periods of life. The new specimens which have been prepared or presented to illustrate comparative physiology include dissections of the circulatory organs of the seal and other aquatic mammals, the mechanism of mammalian mastication and of digestion. The additions to the human osteology series are numerous and include representations of the various remains of paleolithic man found recently on the continent and in England. Visitors will also have an opportunity of examining the new odontological room, opened in December last, and a number of additional minor collections recently added to the Museum. A new guide to the Museum has been prepared for the convenience of visitors and will be published at an early date.

ACUTE ŒDEMA OF THE LARYNX DUE TO THE ADMINISTRATION OF ETHER.

ACUTE œdema of the lungs is a rare but recognised danger of the administration of ether, but œdema of the larynx appears to have escaped notice. In the *Boston Medical and Surgical Journal* of June 2nd, Dr. N. R. Mason and Dr. H. J. Inglis have reported the following case. A woman, aged 25 years and in her first pregnancy, was in good health, but was annoyed by inability to breathe through her nose and resulting sleeplessness. There were hypertrophic rhinitis and naso-pharyngitis, and cauterisation of the turbinals was performed. The larynx was normal. Labour took place at term. After 15 hours the os was nearly fully dilated, but progress was unsatisfactory. Ether was given, and after half an hour full anæsthesia was induced, and a low forceps operation was performed. Extraction was difficult in consequence of the large size of the child. Several vaginal lacerations were sutured with catgut. The period of full anæsthesia was about one and a half hours and about half a pound of ether was used. The patient took the ether badly from the first, becoming somewhat cyanotic and breathing with difficulty. The pulse rose to 150 and was of only fair quality. During recovery from the ether she coughed considerably and complained of sore-throat. Delivery took place at 6.25 P.M. At 10 P.M. she coughed occasionally and the pulse was 116, but the general condition was good. At 2 A.M. there was distinct difficulty in breathing and she complained of mucus in the throat. The dyspnœa gradually increased. At 5.30 P.M. on the following day there was interference with both inspiration and expiration, although the breathing was not stridulous. At frequent intervals there were sharp attacks of spasmodic coughing with expectoration of a little viscid mucus which left the patient weak and striving eagerly for air. She was aphonic. Laryngoscopic examination showed that the aryepiglottic folds, arytenoids, and commissure were much swollen and of a light pinkish colour. The epiglottis was involved to a less degree. The vocal cords were partially abducted and their movements were restricted, the left being almost stationary. Through the opening between the cords the tissues below were seen to be pale and swollen to such an extent that the stenosis was chiefly sub-glottic. Morphine and atropine were given subcutaneously, an ice collar was applied, and an adrenalin spray was used. A spray of creasote almost immediately relieved the distressing cough. Preparations were made to perform tracheotomy if necessary. During the evening several attacks of dyspnœa occurred, during which the pulse rose to 160 and its quality became very poor. Later, soreness over the upper chest was felt. After midnight the secretion from the throat became thinner and more profuse, and she became more comfortable. The improvement continued, and on the evening of the following day the symptoms had largely subsided. There was slight dyspnœa for another day, and two days later the aphonia began to diminish. After this recovery was rapid. In the absence of other ascertainable cause, and in view of the fact that signs of laryngeal irritation began with the administration of ether and persisted

until the onset of the dyspnœa, the œdema was attributed to the ether. Considering the irritating action of ether on the respiratory mucous membrane, it is surprising that the larynx, which is more exposed to the drug than the lower parts of the tract, should not more often show signs of irritation.

IS OPERATION ESSENTIAL IN ALL CASES OF EXTRA-UTERINE GESTATION?

IN describing this week some cases of extra-uterine gestation Dr. T. B. Broadway puts the question, "Should cases of extra-uterine gestation be operated upon at once, or should rest be tried and abdominal section done when the acute stage has passed?" This is a question which cannot be answered in a dogmatic manner. In the first place, cases of extra-uterine gestation differ very largely in their characters and in their dangers, and while it may be quite a safe and indeed an advisable procedure to leave a case of encapsuled peritubal hæmatocele without operation, any delay to open the abdomen in the case of rupture of a tubal pregnancy may well lead to the death of the patient. Undoubtedly at the present time, in view of the excellent results obtained by abdominal surgery, and following the sound surgical rule to cut down upon the bleeding point, practically all surgeons open the abdomen immediately when they have made a diagnosis of a ruptured tubal pregnancy, or when they recognise an extra-uterine pregnancy before rupture or in the later months. The chief matter of dispute is as to the treatment of a definite case of peritubal hæmatocele when it is recognised as such and when, as it usually does, it follows a tubal abortion. Should such a case be operated upon or may it be watched with a very fair prospect that the swelling will become absorbed and the patient make a complete recovery without running the risk of an abdominal or vaginal section? It would be easy, and indeed it has been done, to adduce statistics supporting both views, and it is also easy to bring forward reports of cases in which either method of treatment has ended in disaster. In attempting, however, to form a judgment upon what is admittedly a very disputable point, the cautious surgeon will consider not only the exact pathological condition from which his patient is suffering, but also all the other circumstances of the case. There are, of course, a certain well-defined number of cases in which from the severity of the hæmorrhage, from the presence of suppuration, or for some other good reason it is essential that an operation should be performed; but, on the other hand, there are also a large number of cases in which the patient is at the time she comes under observation not suffering any grave ill-effects from the presence of a large collection of blood within the abdomen. Here a decision has to be come to taking into account very carefully, not only the present, but also all the future possibilities of the condition. In these days, in which an increasing number of abdominal sections is being performed every year, it is well to remember that not every patient who has been dismissed as well by her surgeon is for ever immune from any trouble incidental to the operation she has had performed. Any practitioner of experience could relate cases where the after-effects of even a simple abdominal section have been far from satisfactory, and no one would deny that if a woman with an intraperitoneal hæmatocele can recover without the necessity for any operation, that is the best result which can be desired. But here we are at once met with the argument that although these patients recover, they do not recover so completely as those who have had the blood removed by operation, and that they are very likely to suffer some disability in after years from the remains of the hæmatocele. Such cases, however, may be capable of the explanation that there was something more than merely blood present, as, for example, in the case recorded by Kretschmar, where at a laparotomy undertaken 13 years after the probable date of its death the bones of a three months old fœtus were found in the abdominal cavity. We must further bear in mind that the average length of time required for the complete absorption of an intraperitoneal hæmatocele is about four months, a very long period for a working woman to be laid aside. Then, again, it must be remembered that even when the tumour has been entirely, or almost entirely, absorbed the patient is not necessarily cured; she may suffer some disability from the presence of the diseased tube or from adhesions. The question is, indeed, not one to be answered hastily; the outlook as regards the recovery and safety of the patient is so evenly balanced in many of these cases that it must be decided after a very careful weighing not only of the exact condition present in the abdomen but also of the physical state of the patient, of her surroundings, and of her social position. Probably for many years to come the adherents of the non-operative method of treating these cases—that is to say, cases in which immediate operation is not indicated from the severity of the symptoms—will be as numerous as the adherents of the school who maintain that all the patients should be operated upon at once, no matter what the circumstances in which they may be placed.

CHEMICAL IMPOSSIBILITIES.

IN proprietary medicines chemical formulas are frequently used to indicate the chemical composition. While in the case of a definite chemical substance such as phenacetin the practice is a desirable one, there have been many instances of the misuse of chemical symbols for the purpose of lending an undeserved scientific appearance. At the recent annual meeting of the American Pharmaceutical Association, Mr. W. A. Puckner, of the laboratory of the council on chemistry of the American Medical Association, gave several interesting examples of this form of trickery, whereby certain products have been made to assume an atmosphere of respectability quite out of keeping with their true character. Another class of fake formulas which shows the inability of exploiters of a certain class of nostrums to tell the truth in a plausible way is that class which fails to obey the law of even atoms. Thus, a certain "cure" was said to contain "a new compound derived from a union of hydrocarbons" having the formula $C_{27}H_{17}O_2$. To a chemist such a formula is sufficient evidence of the nature of the stuff, for it is one of the many "chemical impossibilities" that have been, and are still, sold at a price greatly in excess of their actual cost. In devising an awe-inspiring chemical formula with which to embellish advertising matter it is a common performance to select one that is known but which cannot exist in the mixture which is stated to contain it. Rather, again, than acknowledge that their preparation differs from a horde of others only in name, some promoters have exercised considerable ingenuity in devising ways to make a claim of novelty appear true. In many cases the expedient has been adopted of adding together the formulas of the several constituents of a mixture, thus hiding the nature of the preparation. This trick is often still further complicated by an error, intentional or accidental, in adding the formulas together. Another form of deception consists in assigning chemical formulas to impure substances. Thus a preparation containing two substances was given a chemical formula, which was only abandoned when it had been shown that the product did not contain the amount of one element required

by the formula. It is possible that in some cases preparations are wrongly described through sheer ignorance rather than a desire to mislead the purchaser. But, whatever may be the cause, the evil is a common one, and it requires a considerable amount of chemical knowledge to detect the various guises in which deception may appear.

SLEEPING SICKNESS IN THE KATANGA COUNTRY.

Dr. F. O. Stohr, who was formerly a member of the medical staff of the Union Minière, in the Congo Free State, and who was for a time attached to the Bukeya sleeping sickness lazaret, determined on completion of his contract with the mining company to make a tour on his own account in the Katanga country, which lies to the extreme east of the Congo State, not far from the frontier of Rhodesia. The fourfold object of this tour was to map out systematically the limits of Glossina palpalis; to secure patients for treatment with atoxyl; to see how far removal of infected or threatened villages to sites free from tsetse fly was a practicable measure; and lastly, to make one or two clearings with a view of obtaining information as to their value and uses. The results of this tour have been embodied in a pamphlet which Dr. Stohr has published entitled, "Notes on Human Trypanosomiasis in Katanga." In this he gives two maps on which he has shown the areas in which G. palpalis was found and where sleeping sickness had appeared. His efforts to obtain patients for treatment with atoxyl were not very successful. The natives were frequently found to be frightened at the sight of the inoculating needle and were inclined to beat a hasty retreat as soon as it was produced. It was, moreover, a new phenomenon to them to meet with a disinterested stranger who was ready to give them medical treatment free of charge. As is common enough elsewhere, these natives of Katanga placed no value on that which was offered to them for nothing. Generally speaking, the people were apathetic on the matter of the prevention and cure of sleeping sickness in their district. From Dr. Stohr's observations it would appear that the Congo Administration had not followed the advice of its medical expert advisers, though in some cases the local officials had done what they could to act upon the suggestions given. Along the Dikulwe River and its tributaries sleeping sickness had been allowed to spread unchecked. Up to the present time the villages on the Upper Dikulwe have not become infected, but those on the river below Kabangu were badly involved, and there had been many deaths. With regard to removal of villages to fly-free areas, Dr. Stohr found that many of the natives were not unwilling to be moved, but as they have no initiative they need to be told by those in authority not only when to go but also where to go. In this respect also the Congo Administration seems to have neglected its obvious duty. Because either he does not understand, does not believe, or because he is lazy the average native will not take the trouble to search for G. palpalis. As regards the utility of clearing riverside areas Dr. Stohr came to the conclusion that "clearing or no clearing, a village is not safe where there is G. palpalis, unless the people are periodically examined." It is easy as a rule, he says, to examine medically most of the inhabitants of a village, but experience has shown that there are always some persons who, intentionally or otherwise, escape the examination, whether it be made early or late in the day.

WE much regret to learn of the death of Mr. Charles Ralph Keyser, surgeon to the Cancer Hospital, London, which occurred at sea. Mr. Keyser was a brilliant surgeon and but 36 years of age.

POOR-LAW MEDICAL REFORM: WHAT IT SHOULD AIM AT.[1]

BY MAJOR GREENWOOD, M.D., LL.B.

WHEN I had the honour of addressing you at our meeting in Hull in 1908 we were all aware that a change in the present Poor-law was not vaguely threatened, and with that change the fortunes of our service must necessarily be largely implicated. An important Royal Commission was then sitting and minutely investigating every detail of our present system. As we had many grievances, we were naturally not without hope that our position in the future would be improved, and that when every investigation had been made our service might be freed from many of the burdens and difficulties that for so long had oppressed it, and that it might be enabled to take up its true position as the natural guardian of the destitute sick poor of the nation.

At our meeting last year the Royal Commission had made its report, and the critical position of our service became very evident. While most of us had been dreaming of reform it was revolution that had been organised. In the paper I read before you in the Guildhall, London, I endeavoured to show how profoundly our service was threatened by either of the rival reports, and in the time that has elapsed since then I have seen no reason for modifying the views I expressed on that occasion. On the contrary, it has seemed to me that the danger is far wider and more extensive than I at first thought, for the harm likely to be caused by the carrying out of the medical proposals of either the Majority or Minority Commissioners is one that not only threatens to disintegrate our service but to bring about in addition ruinous changes on the whole profession of medicine. It is to this last aspect of the case I would particularly draw the attention of all Poor-law medical officers. The great majority of us are part-timers. The emoluments we derive from our offices are altogether insufficient for our livelihoods, and most of us rely, like our outside brethren, on private practice. As far as we are concerned, then, we cannot afford to entertain some of the propositions that have been put forward from influential quarters. We do not desire a service in which the conditions are to be essentially those of a whole-time service, even if our remuneration is to be based on a somewhat more liberal scale than the present. However favourably we might be regarded by the State, it is highly illusory to imagine for a moment that our salaries as whole-timers would better our present positions. The almost certain result would be that the greater number of us would be compelled to retire from the service and that our places would be occupied by younger men who might regard as satisfactory payment which seems to us altogether inadequate. We are strongly of opinion that it is better for the poor, for the public, and for ourselves that whatever service is organised to attend to the medical needs of the destitute it should be, as far as possible, *a part-time service*. For the country as a whole a strong and independent profession of medicine is of vital importance, and the tendency that has grown up in some quarters to endeavour to promote a general nationalisation of medicine on the lines of our public educational system is one that, in my opinion, needs only to be mentioned to be condemned.

While there continues to exist an independent profession, and likewise not an altogether pauperised public to support it, it will be more satisfactory for the sick State poor to be treated by the same doctors as the rest of the community, and not to have their medical care delegated to juniors and beginners, and this is impossible under any scheme of whole-time State service. For the medical profession it is equally important. Already it is only too well known to us how our legitimate practice has been more and more entrenched upon and undermined by the multiplication of means for the free treatment of all the poorer classes, and a system of part-time Poor-law medical officers who have to rely on their private practice almost as much as other practitioners would be far the best means of checking the inevitable loss that is

[1] An address delivered at the annual meeting of the Poor-law Medical Officers' Association on July 1st at Halifax.

constantly accruing to the profession. A unified medical service, chiefly composed of whole-timers, would increase, not lessen, this loss and would strike a blow at private practice throughout the length and breadth of the land.

I would respectfully commend this side of the question to all the general practitioners of the country, some of whom would seem to think that in our objections to certain schemes put before us we are thinking only of our own selfish interests. I think it would be a bad day for all if either the medical proposals of the Majority or Minority were to be forced upon us. Happily, there is a *tertium quid*, a happy mean, which may possibly lead to a better settlement of this difficult question. I allude to the proposals of Mr. Booth, one of the ablest of the Commissioners, supported by the only representative of our profession who had a seat on that Commission, Sir Arthur Downes. He is the only member in whom we can have entire confidence, as possessing real knowledge of the merits and demerits of the present Poor-law Medical Service. According to the proposals of Mr. Booth and Sir Arthur Downes a reform, and not a break up, of the present system is contemplated, and for that reason the proposals are far more practical and offer a much greater chance of success.

As far as could be judged from the abortive debate that occurred in the House of Commons last April, when the Prevention of Destitution Bill was talked out, it would appear that in the present divided state of opinion in the country on this question no revolutionary scheme would have much chance of success. For any practical change in the present Poor-law therefore it seems to me highly desirable that efforts should be made towards compromise, and that reforms based on our present system should be attempted, rather than the introduction of new principles which, however fascinating they may appear in the eyes of a certain class of reformers, are only based on theories and hopes—hopes, according to the opinion of one of the most authoritative journals of the public lay press, contrary to all practical experience. Whether an inordinate increase in more or less gratuitous medical attendance on all poor persons is good for the nation is at least a question that admits of much difference of opinion; that it is not good for the medical profession I have no hesitation in affirming, and I trust I shall be supported in this view by the bulk of the general practitioners of the country without much difference of opinion. Assuming then that reform should follow the lines laid down by Mr. Booth and supported by Sir Arthur Downes, I propose to consider briefly certain changes that might be made with advantage without threatening a revolution. I do not for a moment wish it to be thought that they sum up all the reforms that are desirable; in fact, I have no doubt that there are others that might easily be formulated and that we might readily agree to. But I think, as an association representing the Poor-law Medical Service, and seeing that the whole of that service has been consulted by us, as far as is possible, we are entitled to lay down certain principles with which our proposed reforms should not conflict. Certain resolutions will be laid before you this afternoon which have been formulated from answers received from an inquiry made to every member of the outdoor Poor-law Medical Service.[2] You have all had printed copies of these resolutions, and you will be invited to confirm them this afternoon.

In the first place, then, although we rightly object to the Poor-law Medical Service being amalgamated with the Sanitary Service and swallowed up in it, I see no reason against a proper coördination between the two services. I approve also of the principle of rendering to Cæsar the things that are Cæsar's, and therefore could not argue against the transference to the sanitary authorities of the administration of the Vaccination Acts. In their hands also should be all the public institutions dealing with the treatment of infectious disease. Such disease may, and should, be treated on different principles to those whereby ordinary disease is dealt with, and the public safety does demand that tests and safeguards, which are necessary for protecting the pockets of the ratepayers when the latter class of disease is treated at the public expense, shall not hamper the immediate and efficient dealing with dangerous epidemic disease. For a similar reason in the same hands should be placed the registration of births and deaths. On the other hand, old age pensions should be part of our Poor-law or public assistance system and should not depend on abstinence in the past from Poor-law relief. If we take the case of two brothers over 70 years of age, one receiving the present old age pension and the other the same weekly payment from the guardians as outdoor relief, it is impossible, in my opinion, to draw any logical distinction between the public relief given in the two cases, and most inequitable to consider one more deserving than the other. A large amount of the overlapping so frequently complained of in the reports of the Commissioners is, in my opinion, due to the faulty way in which legislation has dealt with certain social problems. In consequence of our present Poor-law system having got a bad name, instead of attempting reform, an endeavour has been made to mitigate the evil by creating new Poor-law machinery under another name. To do away with the stigma of pauperism is the almost universal argument in favour of these new creations. It is urged that Poor-law work, when done by a Poor-law authority, carries with it an inevitable stigma, but that when done by another authority that stigma promptly disappears. This argument may satisfy some people, but it can hardly be expected to satisfy all. A certain number may think, not unreasonably, that this stigma is the inevitable consequence of accepting any personal State aid at the expense of the taxed industry of others, which it is ordinarily considered to be the duty of the individual to provide for himself. I think the Majority Commissioners are quite right in recommending that some of our recent legislation should be repealed, and that when we have a properly organised Poor-law, the provision of school dinners, and the medical attendance on school children should be part of the function of that authority. That is an obvious and practical way of getting rid of much of the overlapping complained of, and the increased work thrown thereby on the Poor-law Medical Service would not be objected to if properly considered by increase in the salaries of Poor-law medical officers.

Next, with regard to increased coördination of the Sanitary and Poor-law Medical Services. Much more might be done even now under our present organisation than has hitherto been attempted. The medical register of the district medical officer, at all events in large towns, is always open to the inspection of the medical officer of health, and attention might be given by the former to the recording of the sanitary condition of the homes where domiciliary work was being carried out. Sanitary inspectors, again, in the course of their daily work might take cognisance of cases of illness not under medical supervision and might report the fact to the Poor-law authority. In the matter of tuberculosis a coördination has already been established, and since 1879 there has been the same with regard to all, or any, of the purposes specified in Section 134 of the Public Health Act of 1875. All cases of phthisis are promptly recorded and notified to the sanitary authority, and before long, no doubt, the same will be done in the case of whooping-cough and measles. Dealing with purely Poor-law medical reform certain grievances must under any circumstances be redressed. The provisions of the Metropolitan Dispensaries Order must be applied to the country generally. All drugs and medical appliances required for the treatment of State patients must be provided by the State. There must be a revision of the scale of extra payments for special operations, and the performance of these by district medical officers in rural districts and at a distance from Poor-law hospitals must be fostered and encouraged in every way. There must be no difficulty in obtaining the services of an anæsthetist, and reasonable fees for assistance in operations must be allowed to all Poor-law medical officers. There must be no obstacle, as at present, to prevent the prompt attendance of the district medical officer in midwifery cases. He must no longer be dependent on the relieving officer as to whether he is, or is not, entitled to his fee. If in his official capacity he has attended on a poor lying-in woman, a reasonable fee must be guaranteed to him, it being left to the Poor-law authority to recover the fee, or part of it, at a later period if the financial position of the husband warrants such recovery.

If reforms based on some such policy as this be carried out in our present Poor-law Medical Service, it might be made sufficient to meet all the needs of the destitute sick poor of the community, and might do good work under any Poor-law authority Parliament in its wisdom might think advisable to

[2] THE LANCET, March 5th (p. 670), and May 7th (p. 1292), 1910.

create. It might do so even under such an authority as that proposed by the Majority Commissioners, or, better still, under an "*ad hoc*" authority on the lines of Mr. Booth's proposals. I only protest against the policy of the Minority Commissioners, the "break-up system," and I do so because I believe that, if attempted, it would largely fail in accomplishing even its professed objects; that by largely familiarising the whole community with the idea of State assistance, it would tend to the destruction of individual independence and thrift; and that by greatly curtailing the field of private practice among the poor, it would be ruinous to a large number of the members of our profession.

MOTORING NOTES.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

The 15 h.p. Charron Car.

THE 15 h.p. Charron car should be well known to the medical profession. It is introduced by the London Motor Garage Co., Limited, of 33-37, Wardour-street, W., and can be supplied by them either on the hire-purchase or maintenance agreements already referred to.[1] I recently spent a day in examining and testing one of these cars, and my experiences may be useful to readers of THE LANCET.

The chassis is designed on popular and up-to-date lines, but a number of modified minor features have been embodied. These, with the accuracy and care that an inspection shows must have been taken in assembling, account fully for the satisfied reports that all owners seemingly give. The frame is of pressed steel and the standard length from the dashboard to the end of the frame is 8 feet 6 inches, which is well adapted for both a two-seater or a small landaulette. The chassis is likewise turned out with 9 feet 2 inches and 9 feet 10 inches lengths to order, so practically any kind of body can be fitted, though for usual professional needs the standard measurements are ample.

Casting the cylinders separately as compared with *en bloc* construction is a matter on which manufacturers have different opinions, but the general tendency seems to be for the "all in one" as used on this type. The engine bore is 80 millimetres and the stroke 120 millimetres. This gives a horse power that is quite sufficient to take a car with an ordinary load anywhere that a horsed vehicle can go, and to a large number of places that a horsed vehicle would find impossible. The rating for taxation, which is calculated by the bore on the Automobile Club formula, is 15·8 h.p.; that is, the tax for the medical motorist is £2 2*s*. From the way in which the car behaved I should say it was a very good 15·8 h.p., for it climbed hills with a landaulette body and with five occupants in a quite satisfactory way. The valves are all situated on one side, and the springs holding them down are easy to get at. Plates, held in position by thumbscrews, cover in the valve-stems and lifters. This arrangement is similar to what is adopted on the Napier car; it is certainly an advantage, as it keeps dust out, and in addition detachment is easy. The crank shaft runs in three white metal bearings of ample size. An oil-tank is fitted under the bonnet on the driver's right of the engine, and a pump driven off the two-to-one shaft maintains the circulation of the lubricant through a drip-indicator on the dashboard, and thus to the various points of the motor. Water cooling is by thermo-syphon, and the pipes are set so as to ensure adequate circulation round the cylinders, without the possibility of an air lock. The radiator is, as on the Renault car, behind the engine. Cooling is also helped by a fan. Petrol is fed by gravity from a tank beneath the front seat, and a petrol filter is interposed in the supply pipe at an accessible spot under the front footboards.

The carburettor will appeal to all motorists; it is simple and yet efficient—merely a float chamber into which the filtered petrol enters from underneath. A tube projects at right angles, and into this the jet is screwed. Over the jet is a choke-pipe, in the expanded upper portion of which is an automatic air inlet, and the usual pedal-controlled butterfly valve, through which the mixture, after dilution, passes to the chamber over the inlet valves and thus to the cylinders. The advantage is that, as on the new Darracq, the jet can be removed for cleaning in a second without having to dismantle anything, there being only the hexagonal end to unscrew. Ignition is fixed. This is now the usual practice with makers of small cars. Perhaps a variable ignition may enable an expert to occasionally get more out of his engine, but in cars like the one under consideration I believe it is admitted that the resulting increase in simplicity and the absence of additional parts fully compensate for the want of ignition timing. The magneto fitted is the Bosch DU4 type, which is as efficient and satisfactory as any on the market. It is placed right in front of the engine, driven by the usual dog clutch, and held in its bed by an easily detachable steel strap. A refinement is an earthing switch in front under the frame, so in starting the current may be "shorted," while a good swing is given to the engine, thus avoiding all possibility of a back fire. When the hand quadrant control on the dash board is shut the electricity is also cut off from the sparking plugs. This is of use when descending hills with the clutch in, and the engine in gear; a safe though perhaps a noisy method, but one that is at all events healthy for the brakes.

A push-forward quadrant and lever on the side of the car controls the three forward and reverse gear. The clutch is of the leather-coned type, slotted for gradual engagement. The gear-box is fitted with ball-bearings, and covered with a felt-lined casing, thus conducing to silence. The top speed is a direct drive, the first motion shaft being made solid by the engagement of an internal toothed pinion. From the gear-box the transmission is by propeller shaft to the crown wheel on the differential sleeve of the live axle. A universal joint is fitted at the gear-box end and a sliding one at the other extremity. The brakes are of the internal expanding variety; the hand-controlled working on drums fixed to the driving wheels, and the foot brake operating on a drum on the cardan shaft. A useful detail is the provision of an easily-got-at adjustment for taking up wear—a time and temper saver not to be found on all cars. The control is by the ordinary foot pedal, operating a valve on the inlet pipe. A hand-controlled lever working on a quadrant on the dashboard also regulates the throttle, and can be employed when starting the engine. This lever too, when completely shut, earths the electricity. The rear springing is by three-quarter elliptic and the front by semi-elliptic springs, which make the car a particularly easy-riding vehicle.

The car sent to me was fitted with a landaulette body, with a front glass and an extension over the driver, and for this, as subsequent events showed, I had reason to be grateful. It had a comfortable roomy body, and with five occupants, including myself, I found it to fulfil all the usual needs of a medical man. It took all the hills round Woolwich, and I think they are as bad as can be found anywhere. It could do a fair 28 to 35 miles an hour on the flat, it ran easily, and as far as I could make out would average 23 to 24 miles to the gallon of petrol. It certainly struck me as a car that would be reliable, and not likely to give trouble in the running. The gear ratio, too, seemed excellent, and permitted of most hills being taken on the second speed; in fact, it was only on hills of one in seven or one in eight that the first speed was needed. A short round demonstrated that the car could be easily started, which was rendered easy and safe by the earthing switch near the handle; that the clutch engaged sweetly and without a jerk; that the gears could be changed noiselessly, and that either set of brakes would hold the car on a stiff gradient in both directions.

We then decided to venture on a long run. Soon we had crossed Blackheath, down the hill, where we once more tested the brakes. Then we went through the traffic of Peckham and Camberwell, by Wandsworth, Kingston, Hampton, Staines, Windsor, Maidenhead, and so to Henley. The way the car went on the road on the top speed made me consider it a particularly pleasant one to drive, and impressed me with the advantage of an engine with a long stroke. On feeling the radiator after this run of some 50 miles I found I could easily bear my hand on it, a proof that the thermo-syphon cooling was effective. On restarting the weather changed, and I was afforded an opportunity of comparing the running in the morning over dry roads with that over the wet heavy ones in the afternoon. It seemed to make little difference. The car was nearly always on top gear, and we ran on to Oxford, and then round by

[1] THE LANCET, April 2nd (p. 948) and 23rd (p. 1158), 1910.

the High Wycombe road back for home, with the rain descending in torrents. This made me regret that I had not brought some "Glasso" to apply to the front glass screen; it certainly would have prevented the clouding which almost made us brave the furious rain and drive with the screen up. Near Shotover Hill, where Milton's grandfather was underranger, we were hailed by a passing car, but thinking it merely was a police trap warning we proceeded, and, in fact, we came to the conclusion that on that road it was the correct thing for everyone to shout something at a passing inoffensive car. At Wheatley Bridge, in the district of Waterstock, near a sign-post showing the way to Waterperry, we had the explanation, and nearly had to pay dearly for our disregard of warnings. The road became wet, then a river, and well justified the name of the vicinity. Finally, the water reached the foot-boards, and the fly-wheel was revolving half under water. Then with land within sight the engine stopped; water had entered the make and break of the magneto, and the engine was sucking water up the choke pipe in lieu of petrol. Even a Charron car will not go under such conditions. Luckily, help was at hand, and by the aid of a horse we once more reached terra firma. The amazing fact was that as soon as the water was run out of the shield, and the cap over the magneto make and break was taken off and the parts were dried, the engine started and was none the worse for its bath. Apparently, as a result of the heavy rain, the river Thame had overflowed. We got off luckily, but we saw some other cars that had not been as fortunate and were delayed by ignition worries. Still, we escaped these troubles and proceeded home at a good speed, very well satisfied with the performance of the 15-h.p. Charron car.

This car certainly seemed to me an ideal one for the medical motorist. Possibly from the view of some other small cars the price may not seem strikingly low—chassis £310, landaulette £525. However, a close acquaintanceship with the actual machine will, I am sure, show that the figure charged by the makers is thoroughly justified in the value obtained by the purchaser.

Clouding of Glass Wind Screens.

Since writing in THE LANCET of May 28th on this subject I have received from Messrs. Brown Brothers a sample of "Glasso," a preparation for obviating this inconvenience. It is a sort of cream which, after the glass is cleaned and polished dry, should be applied thinly with a circular motion, and, after being well rubbed in over the whole surface, should be polished off with a soft dry cloth. It is, when thus used, absolutely transparent. From my experience with it in wet weather I am of opinion that it does what is claimed for it by the makers—namely, it prevents the glass from becoming clouded. I have likewise found it efficacious for laryngeal mirrors.

The Care of the Hand-worked Tyre Pump.

In order to keep the piston of the tyre pump air-tight the pump has to be periodically dismantled for greasing of the leather washers. To save doing this, a little hole can be drilled in the barrel above the piston and the washers kept oiled by occasionally injecting a few drops of oil in this orifice. Among others, Hills, the Dunlop, the "Duco," and the Lucas "King of the Road" deserve mention. The latter consists of two barrels, one within the other. The up stroke compresses the air from the larger barrel into the smaller and the down stroke further compresses the air and forces it into the tyre. On this pump, too, an oil hole is provided for the lubrication of the leather washer, as mentioned above. Pump connexions are frequently a trouble. The "Push-on," sold by Messrs. Brown Brothers, and the "Universal," by Messrs. Gamage, are useful, as with them screwing is not needed; merely pushing them on makes an air-tight connexion with the valve. Pumps are certainly worthy of a little care, for it is indeed a true aphorism that—"A good pump and a used pressure gauge mean a small tyre bill."

A Useful Reference Catalogue.

Messrs. Brown Brothers, Limited, have just published their 1910 Motor and Tool Catalogue. It is a work of nearly 700 pages, and even compares favourably with the useful and voluminous price lists issued by surgical instrument makers to the profession. What they are to the medical man, this is to the motorist. A copy will be sent to any motorist on applying to the above firm.

EPSOM COLLEGE.

ANNUAL GENERAL MEETING.

THE annual general meeting of the governors of Epsom College was held at the office, 37, Soho-square, W., on June 24th under the presidency of Sir Henry Morris, Bart., the honorary treasurer. He was supported by a large number of governors, including Sir William S. Church, Bart., Sir Constantine Holman, Surgeon-General Sir Lionel Spencer, Dr. Robert Boxall, Mr. J. Paul Bush, C.M.G., Dr. Francis Charlesworth, Mr. Andrew Clark, Dr. W. Collier, Dr. Charles Drage, Dr. J. P. A. Gabb, Dr. Clement Godson, Dr. L. Grant, Dr. F. de Havilland Hall, Mr. H. W. Kiallmark, Mr. H. E. H. Matthews, Mr. John H. Morgan, C.V.O., Mr. W. A. Propert, Dr. Guthrie Rankin, Dr. St. Clair B. Shadwell, and Mr. Percival Turner.

The report of the scrutineers showing the successful candidates for pensionerships and foundation scholarships as under was read:—

PENSIONERS.

	Votes.
1. Bury, Fanny H.	8081
2. Ryan, Caroline R.	4617

FOUNDATION SCHOLARS.

1. Haythorne, Edmund	8984
2. Lightfoot, Harold P.	8279
3. Beasley, P. Bernard C.	7970
4. Steele, Basil L.	6791
5. Keay, Melville L.	5835
6. Senior, Geoffrey	5748
7. King, George	5346

The SECRETARY reported that as an additional vacancy for a foundation scholarship had arisen since the voting papers were printed, the Council would admit, under By-law 24, Cecil A. Lawrence, the first of the unsuccessful candidates, at their meeting immediately after the annual general meeting.

The CHAIRMAN reported that the Council had sent an address of condolence on the lamented death of King Edward VII. to His Majesty the King and to Her Majesty Queen Alexandra, and called upon the Secretary to read the acknowledgment of the address to the King from the Home Secretary.

It was resolved that the Earl of Rosebery, the President of the College, should be asked to approach His Majesty the King with the request that he would be graciously pleased to succeed the late King as Patron of the College.

The resolution as to the adoption of the report for the past year was moved by the CHAIRMAN, who referred to the large sum of money that had been expended on the new buildings and other improvements at the College, and stated that further expenditure will be necessary when funds are available to erect an isolation building for the reception of patients suffering from any infectious disease, in order that the sanitary and hygienic arrangements at the College may be more complete, especially when there is an epidemic of any infectious disease. He further stated that it was desirable that structural alterations should be made whereby a suitable entrance to the quadrangle from the grounds of the College could be provided. He observed that the recent additions to the buildings and the other improvements were not a new feature in the administration, but were a continuation of the policy which had been followed since the year 1887, when Sir Constantine Holman was elected treasurer. He referred in detail to these additions and improvements, and in complimenting Sir Constantine Holman on the great progress that was made during the 19 years he held the office of treasurer, the chairman said the meeting would be glad to learn that the total of Sir Constantine Holman's collection for the Royal Medical Foundation Fund had just reached the sum of £10,000. He was sure that the meeting would agree with him that these achievements were not only a splendid piece of work for a friend of the College, but were also a most brilliant record for any treasurer to be able to show. In referring to the general work of the school, the chairman said that although the boys were successful in their sports they were not satisfied with their pavilion. The Council were consequently being frequently reminded by satirical comments in the *Epsomian* that a new pavilion in the playing fields was necessary, not only for the comfort of the boys, but also as a

suitable place in which to show hospitality towards those guests who came in friendly rivalry to play matches against them. However, the Council had no funds to meet the expense of such a building; and it would be very gratifying to the boys, as well as to those who had the interests of the boys at heart, if some generous friend of the College would come forward with a donation for the express purpose of providing a new pavilion.

The report of the Council stated that the receipts under the various headings of subscriptions, donations, bequests, dividends, and school account showed a slight increase, with the result that there was a small surplus on the year's revenue. The Council were grateful to the honorary local secretaries and other friends of the College, to whose untiring efforts the increase in the receipts from subscriptions and donations was due, and, whilst cordially thanking them in the name of the governors, they would earnestly solicit their continued efforts, in order that there might not be a falling off in the receipts from these sources during the current year. In spite of past contributions to the Endowment Fund, it was necessary to emphasise the fact that a sum of nearly £5000 must be obtained by annual contributions if the Council were to continue to maintain the full number of 50 pensionerships and 50 foundation scholarships. The extension of the buildings and the various improvements at the College had been completed at a cost of close upon £20,000. These, whilst allowing of an extension and improvement of the old chemical laboratory and theatre, included a new building providing further class-rooms and a room for day boys, together with the "Markham Skerritt" laboratories, which are well equipped for the teaching of physics and biology; a new gymnasium, fitted up with all requisite modern appliances; new music-rooms for class teaching, and a concert hall; a new carpenter's workshop; a new armoury for the rifles of boys belonging to the training corps for officers; a block of buildings containing a new box-room, a new lavatory, and an extension of the latrines; the provision of a hot-water supply, together with heating by the "Reck" circulator system, throughout the College; the extension, levelling, and asphalting of the College quadrangle; and a covered way which goes round the quadrangle and connects all the buildings.

The report further pointed out that since the last annual general meeting the munificent legacy to the endowment fund of £51,076 5*s*. 4*d*., under the will of the late Dr. Henry Fearnside, had been received. The approximate income which will be derived from this legacy is £1690 a year, and it was very largely owing to this fact that the Council decided, on the recommendation of the Works Committee, and after most deliberate and careful consideration, to proceed with the extensive and much-needed additions to the College buildings. A considerable part of the money required for these extensions had been temporarily advanced by the bankers, and the Council were hopeful that help would be forthcoming so as to enable them to expedite the repayment of this loan. There were on the books of the College 48 ordinary pensioners, 9 "Pugh" pensioners, 10 "France" pensioners, 14 "Da Silva" pensioners, 3 "Morgan" annuitants, 5 "Highett" pensioners (of whom 2 receive £30 a year and 3 receive £10 a year), 1 "R. R. Cheyne" annuitant, and 3 "Brodie Sewell" pensioners. The election that day would bring the number of ordinary pensioners up to 50.

The report concluded with the honours of the year, which are as follows:—The Anstie Memorial Scholarship was awarded to J. A. Davies; the Da Silva Exhibition to C. K. Bowes; the Doncaster Gift Scholarship to R. A. F. Eminson; the Forest Exhibition to C. A. Mallam; the Haviland Exhibition to W. R. Wilson; the Jenks Memorial Scholarship to P. D. Scott; and the Harvey Owen Scholarship to R. H. Leigh. The hospital scholarships were awarded as follows:—St. Bartholomew's, R. H. Simpson; Charing Cross, T. W. Pailthorpe; King's College, R. H. Leigh; London, H. G. Winter; St. Mary's, D. R. Alexander; Middlesex, C. E. Procter; St. Thomas's, O. D. Brownfield; University College, and the Carr Exhibition which goes with it, J. H. Sewart; and Westminster, J. S. Ranson. Thirteen boys passed the whole or a part of the first examination for medical degrees of the University of London, 10 boys passed the matriculation examination of the same University, 9 boys gained the higher certificate of the Oxford and Cambridge Schools Examination Board, and 25 gained the lower certificate.

The CHAIRMAN drew attention to the number of boys in the school—namely, 287—and stated that this was a larger number than that reported last year, which was itself a record number. The resolution for the adoption of the report was seconded by Mr. PERCIVAL TURNER and carried unanimously.

Mr. Purnell Purnell having been elected a Vice-President of the College in recognition of his having collected the sum of £1000 towards the funds of the Royal Medical Foundation, and formal business matters having been transacted, a vote of thanks to the chairman, which was proposed by Sir WILLIAM CHURCH and seconded by Surgeon-General Sir LIONEL SPENCER, brought the proceedings to a close.

THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

School Inspection and Medical Treatment.

THE London County Council on June 21st resumed the consideration of the annual estimates and disposed of them after sitting continuously for 14 hours. There were many attempts to secure larger sums for medical treatment and public health administration, but the Finance Committee was obdurate and none of the supplemental estimates asked for were carried. Mr. Jephson moved for an additional £5000 in order that dental treatment might be proceeded with immediately. Mr. Cyril Jackson, the chairman of the committee, in reply, said that an exhaustive report on the whole question was now under consideration by a subcommittee. Inquiries had been made amongst the hospitals and dentists, and they had almost complete information as to the dentists who would be prepared to undertake treatment either in their own or in school surgeries. The scheme would be working before Christmas, and £1000 provision money had been put down in the estimates. The next amendment urged that the present "inadequate arrangements with the hospitals" should be supplemented by an additional expenditure of £5000, and this led to a long debate in which school clinics were strongly advocated. Several speakers spoke warmly on the difficulty of carrying out treatment satisfactorily under present arrangements. Mr. Jackson granted that the medical inspection scheme required to be supplemented, and said he would like to have a "flying squadron" of doctors who should see urgent cases with a view to immediate treatment. As to clinics, he said that 30 hospitals, "carefully selected, as they were, for position," must be more effective than 12 clinics.

The Asylums Committee's Report.

The Asylums Committee's estimates next came to be dealt with, and Sir John M'Dougall took the opportunity of urging that the scheme for the mental hospital should be pushed forward more expeditiously. He was informed that the difficulty of finding a site still stood in the way. At a late hour the often-postponed report of the Asylums Committee with regard to the establishment in London of a receiving house for the early treatment of the insane was reached. The committee asked the Council to reconsider its decision to limit the scheme to one receiving house only, but the Finance Committee strongly opposed any extension, and the *status quo* was maintained.

More Frequent Examination of Epileptic Children.

On June 29th the Education Committee considered a report by a subcommittee as to the need for more frequent examination of children in the schools for the mentally defective. The report stated that the regulations of the Board of Education provided that examination by a suitably qualified medical man must be made at least once a year in order to ascertain whether any of the children were fit to attend an ordinary school, or whether any were so defective as to be incapable of profiting by education of any kind. The parent, however, was entitled to claim re-examination of a child every six months, and this period had been set up as the standard period of re-examination although it had never been attained in fact. The number of children presented for examination with a view to admission to special schools during 1909 was 7479, and the number of children actually in the schools in December of that year was

6389. Owing to the considerable increase in the numbers it was only possible to provide on an average for examination once in 12 months. A prolonged and thorough examination, taking half an hour or more, would enable an almost certain diagnosis of a child's condition to be made, but the extended time would add considerably to the cost, and if each child admitted were re-examined within three months 231 additional visits would be necessary—practically the work of a half-time officer. The subcommittee was of opinion that more frequent examinations were desirable and recommended that two additional quarter-time assistant medical officers (education) should be appointed for the purpose. This was agreed to.

Board of Education's Criticisms.

The Board of Education has drawn the attention of the London County Council to the number of medical examiners approved from time to time under the Elementary Education (Defective and Epileptic Children) Act, 1899, and has suggested the desirability of permanent, rather than temporary, officers for the purpose of the Act. The Board added that in its opinion the Council would do well to consider the question of organising the arrangements for the diagnosis of defective children, and other work in connexion with special schools as a special branch of the school medical service; that in view of the exceptional character of the work it would be a distinct advantage to intrust it to selected members of the permanent staff; and that *prima facie* the arrangement by which a number of officers of the temporary staff are employed appeared to be of doubtful expediency. The Board pointed out that these officers, under the terms of their appointment, devoted only a very small portion of their time to special work (at most two and a half hours a week); that they might be associated only for a limited period with school medical work, either in ordinary or special schools, and be replaced, after a short experience, by other officers new to the work. Such an arrangement appeared to the Board to involve a risk that the efficiency of this branch of the school medical service might suffer.

The subcommittee's reply to these criticisms was that of 13 medical men actually engaged in the examination of special school children 10 were permanent officers, while the other 3 were responsible for open-air schools—institutions only existing during part of the year.

Medical Treatment in Greenwich.

The Education Committee has accepted an offer from the governing body of the Miller General Hospital, Greenwich, to provide treatment for one year for 500 children suffering from affections of the eye and 500 suffering from ear, nose, and throat ailments, in addition to the 50 ringworm cases for which provision has already been made at the hospital. The terms were similar to those agreed upon in the case of other hospitals.

MEDICINE AND THE LAW.

The Dublin City Hospital for Diseases of Skin and Cancer.

THE affairs of the Dublin City Hospital for Diseases of Skin and Cancer, which have been in Chancery since 1907, came under judgment in one of the Dublin courts the week before last. An action was brought against the committee of management by Dr. George B. White, surgeon to the hospital, with whom another plaintiff was associated, the action being relative to a contract between Dr. C. M. O'Brien, physician to the hospital, and the hospital committee; the contract related to the use and working of the Finsen lamp and X ray apparatus in the hospital. The contention of the plaintiffs was that the contract in question was an illegal one. The case appeared before the court on two occasions in May last, when suggestions for a friendly settlement were made and accepted. Mr. Justice Ross was accordingly appointed arbitrator. In giving judgment, he said that after a careful study of all the documents connected with the case he had arrived at the conclusion that although the original arrangements made with Dr. O'Brien might have seemed satisfactory in the existing circumstances, time had shown that they were not so. Mr. Justice Ross stated that he had gone through the accounts, which showed that there was a deficiency of funds for the working of the Finsen and X ray apparatus. He alluded to the obligation which the hospital was under to Dr. O'Brien, and added that he did not think he was treating him harshly in deciding that he must pay £280 and his own costs in the proceedings. He gave this judgment on the understanding that the apparatus and instruments belonged to Dr. O'Brien. He judged the committee to have made considerable mistakes, but on taking into consideration the fact that he was offering judgment upon the affairs of a charitable institution he decided that their costs should be paid out of the funds of the hospital. Finally, whilst not justifying the action of the plaintiff, he allowed him his costs from the hospital funds also. His lordship prefaced his judgment with the remark that "this is the only institution in Ireland where the Finsen light is used for hospital purposes for the treatment of the terrible disease of lupus, which was supposed to have been an incurable disease before it began to be very successfully dealt with in this hospital." Neither statement is quite accurate. A Finsen lamp has been employed in the Royal City of Dublin Hospital since 1902. The Skin and Cancer Hospital, however, was the first institution in Ireland to use this apparatus, hence, doubtless, his lordship's error. He hoped that subscriptions to the hospital—which have been withheld during these proceedings—may be again forthcoming since a satisfactory agreement has been arrived at.

The Sale of Poisons under the Pharmacy Acts, 1868–1908.

At the Kingston-on-Thames county court an important decision was recently given by his honour Judge Harington in a case in which the Pharmaceutical Society were the plaintiffs and the defendant was William Nash, an assistant in the shop of his father, James Nash, who carries on business as a florist and nurseryman at Wimbledon under the title James Nash and Sons. The plaintiffs sued the defendant for a penalty under Section 15 of the Pharmacy Act, 1868, alleging that he had sold poisons in contravention of the section, he not being "a duly registered pharmaceutical chemist or chemist and druggist." The facts were not in dispute. James Nash, the father, held a licence under Section 2 of the Pharmacy Act, 1908, permitting him to sell poisons of the character mentioned therein. This is the section which made an important alteration in the law with regard to poisons by enacting that the provisions of the Pharmacy Act, 1868, shall not apply "in the case of poisonous substances to be used exclusively in agriculture or horticulture for the destruction of insects, fungi, or bacteria, or as sheep-dips or weed-killers, which are poisonous by reason of their containing arsenic, tobacco, or the alkaloids of tobacco, if the person so selling or keeping open shop is duly licensed under this section by a local authority." The defendant, William Nash, who was not so licensed, sold to a representative of the Pharmaceutical Society a bottle of insecticide which was proved on analysis to contain as an ingredient 133 grains of nicotine. The father was not present when the son sold the insecticide. The defence turned upon the question whether as a matter of law the licence held by the father enabled the son, as his assistant employed by him in his business, to sell the poison. His honour in delivering a written judgment, pointed out that the question for him to consider was the interpretation to be put upon the words "the person so selling," and said that he could not think that it was the intention of the legislature to relax the public safeguards in connexion with the sale of poisonous substances. The Act of 1908 only enabled persons other than those permitted by the Act of 1868 to sell poisons under regulations equally stringent with those prevailing under the older Act, the restrictions being that the person selling must be licensed by the local authority. He referred to two decisions, The Pharmaceutical Society *v.* The London and Provincial Supply Association (Appeal Cases, 857), and The Pharmaceutical Society *v.* Wheeldon (24 Q.B.D. 683). These decisions made it clear that in an action under Section 15 of the Pharmacy Act, 1868, the Society were entitled to recover when an assistant not qualified under that Act sold a poison on behalf of a duly qualified employer. Mr. Justice Hawkins, one of the judges who decided the appeal in the second case referred to, said that the Act was passed to protect the public and that the whole object of it would be "frittered away" if an unqualified assistant were to be allowed to sell poisons under it, not being on each occasion under the personal supervision of his employer, or of a qualified assistant. The case of The Pharmaceutical Society *v.*

White (1901, Q B. 601) had been referred to for the defence. The judge pointed out that it was distinguishable because in that case there was a finding of fact that the defendant was not the seller of the poison within the meaning of the section, but was in the position of canvasser for a company with authority to receive money on their account, and that all that the Court of Appeal held was that there was evidence upon which this finding might be based, so that it could not disturb it. With regard to a point raised under Section 17 of the Pharmacy Act, 1868, his honour was of opinion that the section did not apply. This is the section which prescribes the conditions under which a person qualified to sell poisons under that Act is to conduct the sale of them, and the words sought to be made use of in favour of the defendant were those which state that "for the purposes of this section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller." Judge Harington referred to a passage in the judgment of Lord Selborne in The Pharmaceutical Society *v.* The London and Provincial Supply Association, in which his lordship said that this, beyond all doubt, naturally implied a special construction for the purpose of the particular section referred to, and not a construction to be extended to sales generally when mentioned in other sections of the Act. In conclusion, the learned county-court judge found for the plaintiffs, the Pharmaceutical Society, for the amount claimed (£5), but on the application of the defendant's counsel granted leave to appeal. A somewhat similar case has just been heard with a like result in the City of London Court.

Looking Back.

FROM

THE LANCET, *SATURDAY*, June 30th, 1832.

ERGOT OF RYE.

Though the ergot of rye, as far as I can learn, has never yet been made use of as a poison, yet there is no argument but it may be applied to that purpose, either intentionally or unintentionally. That it possesses poisonous properties cannot be doubted, when we have once beheld the remarkable effects which a very small quantity of it has in exciting the action of the uterus, as such therefore it is only a mark of prudence if we make every discovery in our power of the various tests and re-agents which it may possess, and thus prepare ourselves for any evil that may occur. The ergot of rye is but of late introduction into practice; consequently it is yet imperfectly known; but we have every reason to suppose, that as it becomes more common, recourse will oftener be had to it as a means of committing suicide. Opiates formerly were never used as poisons, because the world was almost unacquainted with them; but now, when they are known to every one, they are as often used for destroying life as any other drug. Such being the case, is there not every likelihood that the ergot of rye, at some future period, will be taken with the same design, and thus require the means of discovering what it really is before a court of justice? I will now proceed to examine it. Caustic potash has a very singular effect upon the tinct. secal. cornut. The following are the items:—to about half a drachm of water add two or three drops of the tincture of the ergot of rye, then let fall into the mixture three or four drops of caustic potassa, and it instantly assumes the colour of cape wine, lighter or darker, according as there is more or less of the tincture made use of. Apply this, in a test-tube to the flame of a spirit lamp, and after it has boiled for about half a minute or less, nay, sometimes before it has reached the boiling point, reddish woolly flakes, according to the colour of the liquid, not unlike the detonating cyanate of silver, begin to make their appearance, moving about the fluid, and as it cools falling to the bottom. The stronger the mixture, the more flakes are produced; and the deeper the colour, the redder the precipitate. This is a very delicate test, and however lightly the tincture may be diluted, providing enough of the alkali is added, the flakes are very perceptible. But the effects of this test do not entirely rest here. The change which the potash produces on the diluted tincture, in turning it from a nearly colourless liquid to the clear shade of the best cape wine, is not of the least consequence, and though it alters the colour of almost all tinctures more or less, yet none of them are so powerfully affected as this; add to this, heat strikes it still deeper. Nitro-muriate of gold, after standing for some time, throws down a cloudy yellow precipitate from the tinct. secal. cornut.[1]

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Leicester.—The Registrar-General estimates the population of this town at 244,255, and this figure has been taken by Dr. C. Killick Millard as the basis of his annual statistical calculations. He thinks, however, that this estimate may be 14,000 above the real figure. The general death-rate has shown a very notable decrease from the quinquennial period 1872–1876, when it was 25·18 per 1000, to 1902–1906, when it was only 14·18. For the last three years the average death-rate was under 13 per 1000, a rate which is one of the very lowest amongst the great towns. The cancer death-rate, as has been the case in so many other places, shows a marked increase, and deaths from this cause now amount to 6 per cent. of the total deaths at all ages. Of the total number of deaths which were caused by cancer, 8 per cent. were at ages under 40, 38 per cent. at ages 40 to 60 years, and 54 per cent. at over 60 years. Infantile mortality shows a hopeful decline, the rate having been 126·6 per 1000 births during 1909. In the quinquennium 1892–1896 the rate was 194·4 and in 1902–1906 158·1. Dr. Millard believes that the milk depôt, the visits of health visitors, and the conversion of pail-closets to water-closets have all aided in bringing about this diminution, and he thinks that the fall in the birth-rate, by rendering infant life more precious, may have also exercised a good effect in this connexion. Observations as regards small-pox in Leicester are always of interest, but there is nothing of note to chronicle for 1909, there having been no deaths from this disease in Leicester during the last five years. In 1909 there were but 660 vaccinations registered. There were 1768 cases of scarlet fever notified in the year under review, but the prevailing type was so mild that the fatality-rate was only 1·3 per cent. Dr. Millard discusses the prevalence of scarlet fever in Leicester in past years; and he arrives at the conclusion that, although the disease has been much more prevalent during the past five years than in the previous quinquennium, if the comparison be carried back for the whole of the 30 years during which notification has been in force in the borough, the disease in relation to the population has been no more prevalent than in earlier years. It is necessary, however, to explain that prior to 1900 a local Notification Act was in force, whereby only the first case occurring in a house had to be notified. Consequently, the figures for the earlier years denote the number of infected *houses*, whereas since that date they included the number of infected *persons*. In order, therefore, to make the later years comparable with the earlier an allowance for "secondary" cases has been made, and on the assumption that these "secondary" bore in earlier years the same ratio to primary cases as they have borne within recent years the conclusion referred to above has been come to. Dr. Millard regards these conclusions as rather disappointing having regard to the great efforts which have been made to check the spread of the disease. It may be added that in 1909 65·9 per cent. of the cases notified were removed to hospital. In the case of diphtheria the percentage of cases isolated at the hospital was 59·3, but in this disease Dr. Millard regards the chief advantage of the hospital as the better treatment which the patients can receive. He does not apparently attach much value to such an institution from the point of view of checking the spread of the disease. In his experience the disease in non-epidemic times is not very infectious and shows but little tendency to spread, and during 1909 a second case occurred in the same house in only 5 per cent. of the cases. With reference to measles, the Leicester practice as regards exclusion from school is as follows. The actual sufferers are not allowed to return to

[1] Excerpt from account of "New Tests for Oxalic Acid, Tartar Emetic, Optum, the Ergot of Rye, &c. By John S. Hiley, Esq., Biland."

school for four weeks, and the children below Standard III. are kept from school until two weeks after the onset of the last case, whilst the children in Standard III. and upwards, provided they have already had the disease, are allowed to continue at school. The voluntary notification of pulmonary tuberculosis has been in force in Leicester since October, 1902, and Dr. Millard is, it seems, satisfied with the results. There are 16 beds available at the isolation hospital where the open-air treatment is carried out. The patients are allowed to remain from one to three months, and in special cases longer. No charge is made for the first month, but after that the usual charge is 10*s.* per week. The immediate results are naturally good; the symptoms diminish or disappear and the patients put on weight. But as regards the permanent results, it is difficult to judge from the selected cases, of which details are alone given. Dr. Millard observes that the disappointing side of sanatorium treatment is the number of cases which rapidly go down-hill on returning to their old environment. Cases are not, however, wanting, he adds, where the improvement gained proves lasting or even permanent, and the patient is able to resume his or her ordinary occupation. But it would nevertheless have been instructive had the after-results been given in full and the cases for each year arranged in the manner recommended in the Local Government Board report. Under the Midwives Act the midwives are inspected at the town-hall, the midwives being offered the choice of alternative days for attendance. The Notification of Births Act, 1907, has not yet been adopted, but the system of voluntary notification of births attended by midwives is working well and during 1909 there were 1990 notifications received. Some interesting figures are given in the report as to the cost per head of maintenance in hospital. Such cost amounts in Leicester to 15*s.* 3*d.* per patient per week, a figure which is only approached by Birmingham and Cardiff at 16*s.* 1*d.* and 16*s.* 4*d.* respectively. At Newcastle-on-Tyne the cost reaches 46*s.* 1*d.*, and at the Fountain Hospital of the Metropolitan Asylums Board 71*s.* 6*d.* The differences are so material that we are led to wonder whether the same items are included in every case. But probably this point has been duly ascertained. The medical officer of health includes in his report a reference to the Leicester municipal golf links, which game is, in his opinion, an ideal one from a health point of view. It is amusing to find this matter coming within the scope of the annual report of a medical officer of health, but we take no exception to it or to the memoranda on the ventilation of places of public worship, which also finds a place in this report. Leicester is one of the 13 centres in the country which has provided a crematorium wherein its ratepayers and, for a higher fee, others may have their bodies speedily resolved into their simple constituents. Last year 19 bodies were cremated in Leicester, and an interesting feature is that this number included four members belonging to the working classes.

The Borough of Ipswich.—This town, which has now a population of 75,000, has for a long time manifested an unenviable notoriety in the matter of enteric fever prevalence, but during recent years such prevalence has evinced a marked decrease. This decline is attributable by Dr. A. M. N. Pringle, the medical officer of health, mainly to the substitution of the water-carriage system of excrement disposal for the conservancy system which has gradually taken place since the year 1894. It appears (*a*) that when there were many privies there was much enteric fever; (*b*) that during the same time there were marked epidemic fluctuations; and (*c*) that when the privies fell in number below 2000 the epidemic fluctuations ceased, and a marked diminution in the number of cases of enteric fever took place. A considerable number of cases were also attributed to cockles collected from the polluted foreshore. A similar fall in enteric fever has also taken place both in Birmingham and Leicester, in both of which towns a rapid process of conversion has been in progress during recent years. In Nottingham, on the other hand, where the conservancy system still largely obtains, the decline in the enteric fever prevalence has been but slight.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 77 of the largest English towns 8110 births and 3633 deaths were registered during the week ending June 25th. The annual rate of mortality in these towns, which had declined in the six preceding weeks from 13·8 to 11·1 per 1000, did not exceed 11·2 in the week under notice. During the first 12 weeks of the current quarter the annual death-rate in these towns averaged only 12·9 per 1000, and in London during the same period it was so low as 12·4. The lowest recorded annual rates of mortality during last week in these 77 towns were 5·1 in Walthamstow, 5·3 in Hornsey, and 5·7 in Burton-on-Trent; the rates in the other of the 77 towns ranged upwards to 16·0 in Liverpool, 16·4 in Wallasey, 17·2 in Ipswich, and 19·0 in Merthyr Tydfil. In London the recorded death-rate last week was so low as 10·5 per 1000. The 3633 deaths registered last week in the 77 towns showed an increase of but 42 upon the low number in the previous week, and included 352 which were referred to the principal epidemic diseases, against numbers declining from 425 to 356 in the four preceding weeks; of these 352 deaths, 134 resulted from whooping-cough, 94 from measles, 69 from diarrhœa, 25 from scarlet fever, 17 from diphtheria, and 13 from enteric fever, but not one from small-pox. The mean annual rate of mortality from these epidemic diseases in the 77 towns last week was equal to 1·1 per 1000, against 1·2 and 1·1 in the two preceding weeks. No death from any of these epidemic diseases was registered last week in Croydon, Willesden, East Ham, Walthamstow, Brighton, or in 16 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·8 per 1000 in Tynemouth, 3·3 in Manchester, 3·7 in West Bromwich, and 5·2 in South Shields. The fatal cases of whooping-cough in the 77 towns, which had declined in the four preceding weeks from 159 to 113, rose again last week to 134, and caused annual rates equal to 1·5 in Manchester and Salford, 2·2 in South Shields, 2·5 in Stockport, and 2·8 in Tynemouth. The 94 fatal cases of measles showed a further decline from the numbers in recent weeks, and were fewer than in any week since the end of March; the highest rates from this disease last week were 1·3 in Merthyr Tydfil, 1·5 in Bootle, 1·6 in Barrow-in-Furness, and 1·7 in South Shields. The deaths attributed to diarrhœa, which had steadily increased in the five preceding weeks from 32 to 75, declined again to 69 last week, but showed a marked excess in West Bromwich. The 25 deaths from scarlet fever showed a slight further increase upon recent weekly numbers, and included 3 both in Manchester and Sheffield and 2 in Norwich. The fatal cases of diphtheria, which had been 26 and 30 in the two preceding weeks, declined to 17 last week, and were fewer than in any previous week of this year. The 13 deaths referred to enteric fever included 5 in Manchester and 2 in Preston. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital further declined last week to 1353, and were fewer than at any time during the last six months; 187 new cases of this disease were admitted to these hospitals during last week, against 203, 181, and 166 in the three preceding weeks. The Metropolitan Asylums small-pox hospitals contained 3 patients on Saturday last. Of the 983 deaths registered in London during last week 131 were referred to pneumonia and other diseases of the respiratory system, and were 18 below the corrected average number in the corresponding week of the five years 1905–09. The causes of 24, or 0·7 per cent., of the deaths registered in the 77 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during the week were duly certified in London, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Stoke-on-Trent, and in 55 other smaller towns; the 24 uncertified causes of death in the 77 towns last week included 5 in Hull, 4 in Liverpool, 3 in Birmingham, and 2 in Wolverhampton.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 920 births and 484 deaths were registered during the week ending June 25th. The annual rate of mortality in these towns, which had been equal to 14·3, 14·2, and 13·9 per 1000 in the three preceding weeks, further declined to 13·3 in the week under notice. During the first 12 weeks of the current quarter the death-rate in these towns averaged 15·5 per 1000, and exceeded by 2·6 the mean rate during the same period in the 77 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 10·6 in Greenock and 11·2 in Aberdeen and in Perth, to 13·8 in Leith and 19·9 in Dundee. The 484 deaths from all causes in the eight towns during last

week showed a further decline of 19 from the numbers in recent weeks, and included 61 which were referred to the principal epidemic diseases, against 50, 59, and 42 in the three preceding weeks; of these 61 deaths, 17 resulted from diarrhœa, 12 from measles, 11 from whooping-cough, 9 from scarlet fever, 8 from diphtheria, and 4 from "fever," but not one from small-pox. The mean annual rate of mortality from these epidemic diseases in the eight towns last week was equal to 1·7 per 1000, against 1·1 in the 77 English towns; the highest rates from these diseases in the Scotch towns last week were 3·3 in Paisley and 3·4 in Dundee. The 17 deaths attributed to diarrhœa in the eight towns exceeded the number in the previous week by 2, and included 9 in Glasgow, 3 in Dundee, and 2 in Paisley. The fatal cases of measles, which had been 20, 13, and 15 in the three preceding weeks, declined to 12 last week, of which 4 occurred both in Glasgow and in Dundee and 3 in Paisley. The 11 deaths from whooping-cough showed, however, an increase upon recent weekly numbers, and included 7 in Glasgow and 3 in Dundee. The 8 deaths referred to diphtheria also showed an increase, and included 6 in Glasgow; and the fatal cases of scarlet fever, which had been but 5 and 2 in the two previous weeks, rose to 9 last week, of which 5 occurred in Glasgow and 3 in Edinburgh. Of the 4 deaths referred to "fever," 2 cases of cerebro-spinal meningitis were returned in Glasgow, and 1 of enteric both in Edinburgh and Paisley. The deaths referred to diseases of the respiratory system in the eight towns, which had been 82, 67, and 56 in the three preceding weeks, rose again to 61 in the week under notice, but were 3 below the number in the corresponding week of last year. The causes of 21, or 4·3 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 539 births and 396 deaths were registered during the week ending June 25th. The mean annual rate of mortality in these towns, which had been equal to 17·8 and 18·9 per 1000 in the two preceding weeks, declined again to 17·9 in the week under notice. During the first 12 weeks of the current quarter the annual death-rate in these Irish towns averaged 20·5 per 1000, whereas the mean rate during the same period did not exceed 12·9 in the 77 largest English towns and 15·5 in the eight principal Scotch towns. The annual death-rate during last week was equal to 15·5 in Dublin, 20·9 in Belfast, 13·5 in Cork, 12·0 in Londonderry, 19·1 in Limerick, and 19·5 in Waterford; the mean annual death-rate last week in the 16 smallest of these Irish towns was equal to 17·9 per 1000. The 396 deaths from all causes in the 22 town districts last week showed a decline of 22 from the number in the previous week, and included 50 which were referred to the principal epidemic diseases, against 55 and 68 in the two preceding weeks; these 50 deaths in the Irish towns were equal to an annual rate of 2·3 per 1000, while in Belfast it was so high as 5·5; in the 77 English towns the mean rate last week from the same diseases did not exceed 1·1, and in the eight Scotch towns 1·7 per 1000. The 50 deaths from these epidemic diseases in the Irish towns last week included 39 from measles, 4 from diarrhœa, 3 from whooping-cough, 3 from "fever," and one from diphtheria, but not one either from scarlet fever or small-pox. The fatal cases of measles in the 22 towns, which had increased from 33 to 52 in the four preceding weeks, declined again last week to 39, of which 36 occurred in Belfast and 3 in Londonderry. The 4 deaths attributed to diarrhœa included 3 in Belfast and 1 in Dublin; and the three fatal cases of whooping-cough also showed a decline from recent weekly numbers. The three deaths referred to "fever" included one from typhus in Dublin and 1 from enteric both in Belfast and Limerick. The deaths in the 22 towns referred to pneumonia and to other diseases of the respiratory system, which had been 78 and 62 in the two preceding weeks, rose again to 72 last week. The causes of 13, or 3·3 per cent., of the deaths registered in the Irish towns last week were not certified; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·7 per cent., and in the eight principal Scotch towns it was equal to 4·3 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet-Surgeons: J. C. Ferguson, to the *Crescent;* H. Clift, to the *Venerable;* C. S. Facey, to the *President,* additional, for temporary service at the Admiralty Recruiting Department. Staff-Surgeons: L. S. Whitwam and C. A. G. Phipps, to the *Pembroke,* additional, for disposal. Surgeons: A. B. Marsh, to the *Vivid,* additional, for disposal; W. Mearns, to the *Redbreast;* and J. McA. Holmes, to the *Actaeon.*

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel George J. Coates, half-pay list, retires on retired pay (June 25th, 1910).

Lieutenant-Colonel M. W. O'Keefe, Senior Medical Officer at Rawal Pindi, has, on promotion, been appointed Inspector of Medical Services at the War Office, and proceeds home to take up the appointment. Colonel M. W. Kerin, at present Officiating Principal Medical Officer of the 8th (Lucknow) Division, will rejoin the Bareilly and Garhwal Brigades as Principal Medical Officer on relief by Surgeon-General J. G. MacNeece from Malta. Lieutenant-Colonel R. Caldwell, Sanitary Officer at Wynberg, has been transferred to Pretoria. Lieutenant-Colonel T. Du B. Whaite, from Canterbury, has been posted to Woolwich. Lieutenant-Colonel H. P. G. Elkington has been appointed to Buttevant. Lieutenant-Colonel R. J. Geddes, D.S.O., has been appointed to officiate as Principal Medical Officer of the Jubbulpore and Jhansi Brigades. Major J. Thomson has been transferred from Pretoria to Harrismith for duty at the Station Hospital. Major H. G. Martin, from Agra, has taken over command of the Station Hospital at Lebong. Major M. MacG. Rattray, from Gravesend, has been appointed to Brighton. Captain J. W. H. Houghton, from Queen Alexandra's Military Hospital, London, has been transferred for duty to the Cambridge Hospital at Aldershot. Captain C. G. Browne has been appointed a Specialist in Dermatology and Venereal Diseases to the 8th (Lucknow) Division. Captain O. W. A. Elsner, on arrival in South Africa from Dublin, has been posted to Pretoria. Captain C. Scaife, from Khandalla, has been transferred to Colaba and appointed Specialist in the Prevention of Disease for the Bombay Brigade. Captain H. C. Hildreth, from Maymyo, has been posted to Dublin District. Captain G. A. Kempthorne, from Lahore, has been appointed to Dalhousie for the summer months. Captain R. J. C. Thompson has been transferred from Pretoria for duty in Egypt. Captain J. P. Lynch, on completion of a tour of service in Burma, has been appointed for duty at the Station Hospital, Ranikhet. Captain P. Dwyer has arrived home on leave from India. Captain M. J. Cromie has received three months' extension of his leave, on medical certificate. Lieutenant G. S. Parkinson, from Belfast, has joined for duty at Athlone. Lieutenant F. B. Dalgliesh, on arrival in India from the Royal Victoria Hospital at Netley, has been posted to Poona. Lieutenant H. V. B. Byatt has been transferred from Poona to Khandalla for duty at the Station Hospital during the summer months.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel F. W. Gee, Staff Officer for Medical Mobilisation Stores, 8th (Lucknow) Division, has been granted one year's extension of the tenure of his appointment. Lieutenant-Colonel A. L. Duke has been appointed Administrative Medical Officer of the North-West Frontier Province, vice Lieutenant-Colonel G. W. P. Dennys, appointed Principal Medical Officer of Aden Brigade. Lieutenant-Colonel H. Greany has arrived home on leave. Major C. E. Williams, Sanitary Commissioner of Burma, has been granted 15 months' leave home. Major S. A. Harris, from the United Provinces, has been appointed to officiate as Sanitary Commissioner, Burma. The services of Major S. Browning-Smith, Chief Medical Officer in Charge of Plague Prevention in the Punjab, have been replaced at the disposal of the Home Department of the Government of India. Major W. D. Hayward has been appointed

to officiate as Medical Storekeeper at Calcutta. Major R. G. Turner, Civil Surgeon at Gonda, has been transferred as Civil Surgeon of Cawnpore, vice Major W. Young, who has been granted leave from India. Major J. W. Watson, Bombay Presidency, has arrived home on leave. Captain H. W. Pierpoint, Officiating Civil Surgeon at Chanda, has been appointed to the Executive and Medical Charge of the Chanda District Jail. Captain N. S. Simpson has been appointed Officiating Medical Officer in Charge of the First Battalion 9th Gurkha Rifles. Captain W. P. G. Williams has been posted to the Madras Presidency for employment in the Jail Department. Captain A. W. M. Harvey has been appointed Officiating Medical Officer in Charge of the 31st and 32nd Mountain Batteries, Royal Artillery. Captain C. A. Sprawson, Captain E. A. C. Matthews, Captain J. E. Clements, Captain J. A. Cruickshank, and Captain H. D. Peile have arrived home from India on leave.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned to be Lieutenants (on probation):—Claude Johnson (dated May 25th, 1910); John Ronald Rigden Trist (dated May 30th, 1910); and Thomas Alexander Weston (dated May 31st, 1910).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Eastern Mounted Brigade Field Ambulance: Supernumerary Lieutenant Meredith S. Doubble is restored to the establishment (dated March 1st, 1910).

1st Highland Field Ambulance: Major Francis Kelly, from the 2nd Highland Field Ambulance, Royal Army Medical Corps, to be Lieutenant-Colonel (dated May 22nd, 1910).

5th Southern General Hospital: Major Bonner H. Mumby to be Lieutenant-Colonel (dated June 25th, 1910).

For attachment to Units other than Medical Units.—James Taylor Rogers MacGill, to be Lieutenant (dated March 23rd, 1910). Edmund Litchfield Anderson (late Lieutenant, 9th Battalion, The King's (Liverpool Regiment)), to be Captain (dated April 7th, 1910). John Graham to be Lieutenant (dated May 7th, 1910). John Goss to be Lieutenant (dated May 10th, 1910). Surgeon-Major Harry Poole Berry, from the 4th Battalion, The Lincolnshire Regiment, to be Major, with precedence as from Sept. 13th, 1902 (dated June 25th, 1910).

Attached to Units other than Medical Units.—Lieutenant Antony A. Martin to be Captain (dated Oct. 10th, 1909). Captain Herbert S. Oliver to be Major (dated Feb. 24th, 1910). Lieutenant John M. Bowie to be Captain (dated May 1st, 1910). Captain David M. Macdonald resigns his commission (dated June 25th, 1910).

THE BIRTHDAY HONOURS.

The full list of Birthday Honours for the medical profession will be found on page 40 of our current issue. In the Services Inspector-General of Hospitals and Fleets James Porter, C.B., Director-General of the Medical Department of the Royal Navy, has been promoted to a Knight Commandership of the Order of the Bath; and Surgeon-General Arthur Thomas Sloggett, A.M.S., C.M.G., Principal Medical Officer in India, and Surgeon-General Owen Edward Pennefather Lloyd, R.A.M.C., V.C., Principal Medical Officer in South Africa, have been made Companions of the same Order. Surgeon-General Charles Pardey Lukis, Director-General of the Indian Medical Service, has received a Companionship of the Order of the Star of India, and Surgeon-Lieutenant-Colonel Warren Roland Crooke-Lawless, C.I.E. (Coldstream Guards), has been made a Knight. Colonel Roderick Macrae, I.M.S., has received a Companionship of the Order of the Indian Empire; and Captain Robert McCarrison, I.M.S., Agency Surgeon at Gilgit, has received the Gold Medal of the Kaisar-i-Hind. Colonel Andrew Clark, administrative medical officer of the 2nd London Division of the Territorial Force, has been appointed surgeon to the King; and Colonel Joseph Whitfield Blandford, administrative medical officer of the Northumberland Division of the Territorial Force, has been appointed physician to the King.

MEDICAL EDUCATION AND THE ARMY.

In distributing the prizes to the students at St. Thomas's Hospital on June 23rd Sir Alfred Keogh, K.C.B., said that the fact that a student had gained a prize was no indication whatever of how he would do later in life. It only indicated ability and a capacity for work. The London schools were unrivalled anywhere as far as the education of their students in clinical work was concerned, and the provincial schools were also doing splendid work, particularly in the preliminary education for the profession. After leaving his college, however, the Scottish student got abreast, if not ahead, of his English *confrère* in later years. This Sir Alfred Keogh attributed to the Scottish system of preliminary instruction, and in the army the man who had been a Scottish student often succeeded best, not because he was a Scotsman, but because his preliminary scientific training enabled him better to keep abreast of medical progress.

GENERAL ASSEMBLY OF THE ORDER OF ST. JOHN OF JERUSALEM IN ENGLAND.

The annual General Assembly of the Order of the Hospital of St. John of Jerusalem in England was held at St. John's-gate, Clerkenwell, on June 24th, Lord Knutsford, the Chancellor, presiding. The election of the Duke of Connaught to the office of Grand Prior was announced and favourable reports of the continued progress of the Order and its various departments were submitted. A statement was also made showing the coöperation afforded to the War Office scheme for the formation of voluntary aid detachments. During the past few months over 30,000 persons have passed through the classes instituted by the ambulance department, this number being in addition to the general work carried on by the St. John Ambulance Association.

THE BRITISH RED CROSS SOCIETY.

At a meeting recently held at Ottery St. Mary (Devon), under the presidency of Major R. Coleridge, detachments for men and women of the British Red Cross Society were formed, with Mr. F. P. Bartlett, M.R.C.S. Eng., and Mr. A. L. Fielding, L.R.C.P. Edin., L.R.C.S. Edin., as medical officers. The commandant of the men's detachment (Colonel Scholes) stated that this was the first men's detachment formed in Devonshire.

THE TERRITORIAL FORCE ASSOCIATION FOR DEVON.

Earl Fortescue presided at a meeting of the Territorial Force Association for the county of Devon which was held at Exeter on June 15th. It was decided to represent to the War Office that the grant of £25 which was allowed for the office of administrative medical officer for the Wessex division (Surgeon-Colonel J. Raglan Thomas) was quite insufficient, and to recommend that the Government grant should be raised to £100.

The 4th Southern General Hospital (Territorial Force) will carry out their annual training at the Military Hospital, Devonport, from July 9th to 23rd.

Correspondence.

"Audi alteram partem."

A MARINE FLOATING LABORATORY FOR THE STUDY OF TROPICAL MEDICINE.

To the Editor of THE LANCET.

SIR,—I notice in your columns that a proposal is afoot for the establishment of a School of Tropical Medicine in Calcutta. All students of the subject must wish such a scheme every success and hope to see it carried into effect, for the benefit to India would be incalculable, and not to India only, but to all countries waging war with tropical disease. It has occurred to me that at this time I may, possibly with advantage, again press the claims of what I believe would be an even more useful institution. As a direct result of the usefulness of our small floating laboratory on the Nile I wrote as follows in the introduction to the third report of these laboratories:—

> Indeed, I may perhaps be pardoned if I here state my conviction, already recorded elsewhere, that in the teaching of tropical medicine in Great Britain what may be called a marine floating laboratory would be of the utmost service. Every year I am inundated by appeals for material for teaching purposes from England, Scotland, Ireland, the United States, and various parts of the continent. It is noteworthy that amongst the institutions which apply are the two great English Schools of Tropical Medicine at London and Liverpool, and it is evident that even the latter school, despite its

numerous and valuable research expeditions, cannot obtain all it requires for the instruction of its students; hence I believe the difficulty might be solved by the provision of a well-equipped laboratory on board a vessel of from 800 to 1000 tons burthen. Such a ship would be able to visit any portion of the globe, could ascend large navigable rivers, and would be the means of bringing back a store of most valuable material both for museum and teaching purposes. It would be the duty of whoever was placed in charge to conduct abroad the best students in tropical medicine of any year. Participation in such an expedition would be the prize of diligence and ability, and in such a laboratory both tutorial and research work could be conducted during the voyage. Doubtless a certain number of graduates would welcome the opportunity for such a course of study, as opportunities would be afforded for visiting tropical hospitals and laboratories in different countries. If properly approached I believe those in charge of such institutions would be glad to assist in every possible way, and they might be repaid by demonstrations of new technique and interesting specimens. These institutions are often in cities on or near the sea, as, for example, Calcutta, Bombay or Madras, Cairo, Alexandria or Leopoldville, Hong-Kong, Rio de Janeiro, Manila, and so on. It is on the littorals of tropical countries that dengue, yellow fever, and other important diseases occur, and in the event of epidemics the infected places might be speedily visited and perhaps materially aided and benefited, while at all times the collection of specimens bearing on tropical medicine would form a most important duty. Specimens could be brought back in good condition, diseases studied on the spot, and parasites, especially blood parasites, observed in a living state. It will be at once apparent that such a laboratory ship could be utilised for the study of zoology, especially economic entomology, botany, geology, and hygiene, all subjects more or less intimately connected with tropical medicine.

The *Challenger* Expedition is still remembered. This scheme would provide for a kind of perpetual *Challenger*, and would, I think, challenge comparison favourably with any existing method of giving instruction in diseases of the tropics. It seems to me that it is largely a question of money, for difficulties as regards stability at sea, which are important in connexion with microscopic and other delicate work, might possibly be surmounted by the application of the principles of the gyroscope. I commend this idea to the consideration of those responsible for the teaching of tropical medicine to students in temperate climates.

Little or no notice has been taken of the suggestion save by some of the colonial newspapers, an enterprising firm of shipbrokers, and by the late and lamented Professor Cunningham of Edinburgh, who saw at once the great possibilities of such a laboratory and the opportunities it offered for the study of anthropology and comparative anatomy, subjects not so closely allied to tropical medicine as those above cited. That the arguments advanced were sound has again been recently proved.

Dr. C. W. Daniels writes me from London thanking me for specimens of the parasites of quartan malaria, and stating that their stock of slides exhibiting these organisms is well-nigh exhausted. Dr. J. W. Stephens writes me from Liverpool in the same strain as regards *Leishmania donovani*. But I think even more of the clinical opportunities than the pathological. How often does one hear a medical man in the tropics exclaim, "I am sure I don't know. I have never seen a case." Moreover, it is a great matter to observe cases under conditions in which they naturally occur. A case of sleeping sickness in London may give very little idea of the same disease as it occurs in Uganda; a case of blackwater fever in England may differ very considerably from the same dreaded complaint on the West Coast. There is a vast deal in environment, in tropical conditions, a vast deal to note both as regards symptoms and treatment. Think how tropical hygiene might be studied by those fortunate enough to travel in such a vessel. The ordinary medical man at home, however he may read and re-read the excellent manuals on tropical sanitation which now exist, has, I am convinced, but a vague idea of the conditions which obtain in tropical countries and the problems to be faced. The work must be learned practically after the theoretical foundation is laid, but I submit that the student should have this practice, not the man who comes out to take charge and who, without it, will lose time—valuable time which spells human lives. I write with some experience and because I am conscious of mistakes made and opportunities lost solely from lack of experience. That our English Schools of Tropical Medicine have accomplished a great deal I would be the last to deny. They have been a boon to mankind, but if, under the control of the Colonial Office, a marine floating laboratory was affiliated to these schools their usefulness would be increased four, ten, a hundred-fold. Apart from anything else, what a link such a laboratory would be in binding together the Mother country and her colonies in humanitarian bonds, in establishing relations between schools at home and their *alumni* working in the dark places of the earth! The thought is a fascinating one, but it is chilled by the bogey of expense. Still money is found, rightly and readily found, for polar expeditions. Valuable though these may be, can they for a moment compare, as regards benefit to mankind, with repeated expeditions of the kind outlined? Emphatically no. Even in their scientific aspect I do not believe they can serve so useful a function. It is the beginning of a new reign. Is it too much to expect that some of our wealthy philanthropists may mark the occasion by the gift of such an institution? Its value is not to be reckoned in money, but in health and energy and human lives and the spread of knowledge, and the forging of yet another link between Britain and her children. I am, Sir, yours faithfully,

ANDREW BALFOUR.

Wellcome Tropical Research Laboratories, Gordon Memorial College, Khartoum, June 2nd, 1910.

SOME MEDICAL ASPECTS OF PROPOSED POOR-LAW REFORM.

To the Editor of THE LANCET.

SIR,—In a leading article in your last issue under the above heading you say in reference to some remarks of mine which draw a distinction on principle between public services, such as the Sanitary, which are primarily for the good of the community, and only secondarily for that of the individual, and the Poor-law, which are primarily for the good of the individual, that you cannot appreciate the distinction: "The actual attendance of the Poor-law medical practitioner affects the individual precisely as does that of the public vaccinator."

I should have thought that the distinction generally was clear and well defined. On the principle that *Salus republicæ summum jus*, the State may insist on acceptance by the subject of services which are necessary for the public welfare, and rightly does so without regard to the wishes of the individual who may not even be benefited directly by them. It is otherwise where the services are primarily for the good of the individual. Such services may be also for the well-being of the community in a certain sense, but they cannot be made compulsory without tyranny. The burden, too, of the provision must be considered. As the expense of these services has to be met by the forced contributions of *all*, only the provision of those services coming under the former category has an absolute right to be paid at the public cost. The only justification for the provision of the latter services at the public cost is when they are restricted to a certain class who labour under some necessity not shared by the rest of the community, which may be a sufficient reason for allowing it a special privilege—that is, the granting of such services should be subject to a "test."

The distinction seems to me clear in the instance you quote. The district medical officer, acting for the community, offers his services, which may be *legally* declined by the individual. The public vaccinator likewise offers his services, but these may not be *legally* refused—i.e., if refused without good reason the State punishes the recalcitrant individual. Why is there this distinction, if it is not because in the latter case it is the welfare of the State that is imperilled, and in the other only that of the individual? Where so important a principle as *compulsion* intervenes between these two classes of services, I think I may fairly claim that the distinction I draw is a valid one. I am aware that the Minority Commissioners desire to obliterate this distinction and to apply compulsory methods at the present time unlawful. They are logical in this respect, as nearly all sanitary enactments are compulsory, and as they propose to make the Poor-law a department of public sanitation the methods of the latter require to be adopted. When this is done, no doubt, all *practical* distinction will become obliterated.

Again, you say that as, according to the intentions of both the Majority and Minority Commissioners, "there shall be an important increase in the amount of work done by the medical profession as a whole among the working classes, and also that the increase shall be paid for in part or wholly out of public moneys," it can hardly bring about disaster to the medical profession. Is this sound reasoning? It appears to me that, even granting all the above, the last state of the profession *might* be worse than the present. Let it be granted there is a considerable increase of medical work among the working classes, and that a considerable amount is paid for out of public moneys, I see no reason for admitting

that the aggregate of all professional receipts from the working-classes under these conditions, together with all the public moneys, must necessarily exceed that now received by the medical profession from the working classes. There are many factors to be considered in such a problem. The extra work found for the profession is intended to destroy much of their present work, for its professed object is to *prevent* disease. If it did not succeed in this it might none the less disorganise a good deal of work that at the present time is fairly remunerative. The multiplication of medical officials under the Minority recommendations, or the enormous increase of contract work under those of the Majority Commissioners, would certainly not make private practice more profitable. It might not unlikely result in levelling down all medical practitioners to, say, a modest income of £200 per annum. There may be some who would not consider such a result disastrous for the profession, but I am not one of them. No doubt there is a class of private practitioners, who would be practically independent of all such changes, whose incomes would not be appreciably affected thereby. There need be no disaster for them, but this class is unfortunately very small when compared with the bulk of the medical practitioners of the country.

I am, Sir, yours faithfully,

MAJOR GREENWOOD.

Hackney-road, N.E., June 25th, 1910.

IS APPENDICITIS CONTAGIOUS?

To the Editor of THE LANCET.

SIR,—I have been interested in reading Dr. Donald Hood's letter in THE LANCET of June 11th in which he asks the question, "Is appendicitis contagious?" I am inclined to answer this question by stating that appendicitis is not of itself contagious, but that the condition of mucous colitis which is so often associated with it, and so frequently overlooked, may be more or less infectious, and in my opinion it is this disease which has led to the large number of cases of appendicitis in the Farnham district which have been commented upon by the medical officer of health. Nearly two years ago I pointed out the relationship of mucous colitis to appendicitis and pericolitis,[1] and subsequent experience of a considerable number of cases of colitis has given me stronger evidence of the close association of the two conditions. Our knowledge of the surgery of the appendix has become very complete, yet the condition of mucous colitis which may lead up to appendicitis is not sufficiently understood and recognised by the majority of practitioners and some operating surgeons. I make this statement in no egotistical spirit, and with no feeling of disrespect, for little has been written or taught about the subject, and it is new to many, as it was to me a few years ago. Nowhere in Europe, excepting Plombières and Chatel Guyon, is there gathered together such a number of cases of colitis for treatment as at Harrogate, and the fact of these coming from all parts of the world is proof that this disease is very widespread, and gradually becoming better recognised. I have not infrequently heard it said by medical men and patients that everyone passes mucus, which is quite true, but mucus, when normally secreted, should be invisibly mixed with the fæces, but when it is seen in any quantity, except after some strong purgative, it is abnormal, and usually constitutes the condition of mucous colitis. I embrace in the term "mucous colitis" that morbid condition of the mucous membrane of the colon in which the predominating feature is the passing of mucus in the stools, most frequently the result of catarrhal inflammation. Inasmuch as the mucus is seen sometimes in viscid masses or ropy strings, and at other times quite membranous and occasionally as casts of the bowel, some have given the name of "membranous colitis" to the latter condition, but the membranous is merely an extension of the mucous form of colitis.

Any source of irritation may bring about colitis, and undoubtedly irritating articles of food assist considerably, and a doctor who traces his colitis to a dust storm in Egypt suggests dust irritation as a cause. It may be in some cases a contributory factor, for we know how dust affects the conjunctiva of the eyes of the motorist, but in by far the largest number of cases constipation is a prominent feature, and is probably the exciting cause. A localised or general catarrhal inflammation may be set up affecting the cæcum or the whole colon and the appendix may become involved by extension of the inflammation. At the present time I have several cases of mucous colitis under treatment which have been operated upon for appendicitis. They all give a history of having suffered with constipation and of having passed mucus before the appendicular attack, and in all probability if the colitis had been successfully treated no appendicitis would have occurred. Sir Frederick Treves, whose name will be always associated with the appendix, fully realised that colitis was the chief cause of failure to relieve symptoms when removal of the appendix was unsuccessful. At the present time I have a lady operated upon by him 11 years ago for appendicitis who states that she had been constipated and passing mucus ten years before the operation, and she has been suffering the same symptoms ever since. In her case the appendix was diseased, but the colitis unrelieved.

Mucous colitis is no new disease, but seems to be more prevalent than formerly. It seems to run in families and is frequently associated with some gastric disorder and, as in the case of gastric disturbances which I have shown before in these columns,[2] it is usually those of a nervous temperament who are affected, and in both conditions external temperature is a contributory factor in their development. I have reason to think that soil has some influence, for there is an association between the two conditions asthma and colitis, and I have two cases at the present time who suffer with asthma and are better on a gravel soil. It attacks the young as well as the old, and at a meeting of the Medical Society of London some time ago Dr. F. J. Poynton quoted three cases of young children, aged respectively 18 months, 2 years, and 2½ years, who had been operated upon for appendicitis following colitis. The symptoms of colitis may simulate very closely those of appendicitis, and cases are operated upon in which the appendix is found afterwards to be normal, and in my opinion it is safer removed, although it may not have shown any acute morbid changes.

But it is, however, the family doctor, more than the consultant, who can throw light upon the history and prevalence of the disease, and a practitioner who consulted me last December concerning the treatment of his own colitis made the following interesting statement of his experience. He practises in a small seaside town, which, for obvious reasons, shall be nameless, and he tells me that a large proportion of his patients pass mucus with the stools. I have recently communicated with him, and he writes: "I believe there is something in the locality or atmosphere which makes it so common here, but yet, on the other hand, I believe it is common elsewhere but overlooked. I had it myself, and that is why I am probably up against it more than I should otherwise have been, for until I noticed my own case the trouble here had not been noticed by me. I find that men, women, and children—even babies—suffer from this trouble. I believe that it is often overlooked, and that if the other doctors here and elsewhere looked for it they would find it extremely common. This statement I make from the large number of cases I get of people from London and elsewhere who send for something else, and upon inquiry as to the bowel condition I find an enormous percentage have suffered, and are suffering, from mucous colitis. My own small son has just returned from the Midlands with a very bad attack; he has repeatedly had them here, and many children I attend suffer in the same way. I am certain that it runs in families, and not only in families but in members of the same household and community, pointing rather to some infection. My wife, myself, and my young son have all suffered from it. I find it much more common after winds and cold damp weather, the winds preceding attacks being East, N.E., and S.W., which latter are very cold here. The neurotic theory I cannot accept, for just now I have our butcher (one of the finest specimens one could meet in any country, and otherwise as sound as a bell) laid up with a bad attack, and I get policemen, soldiers, postmen, railwaymen, &c., all the same, and there is not much kudos to be got by the navvy, railway porter, or soldier out of nerves." In acknowledging this communication I inquired if there was much appendicitis in this particular district, and the reply I received was as follows: "No; these cases don't have true appendicitis,

[1] Brit. Med. Jour., July 11th, 1908.

[2] THE LANCET, April 14th, 1906. The Influence of the Nervous System and External Temperature upon Certain Circulatory Changes Concerned in the Etiology of Catarrh, Ulcer, and Simple Dilatation of the Stomach.

though I am well aware that the appendix is removed on the supposition that this is the cause of the pain and symptoms, and the other condition of mucous colitis is either overlooked or counted secondary to it. I, myself, have removed years ago several appendices which were to all naked-eye appearances normal, and then we wondered afterwards where the symptoms typical of appendicitis arose. Now, I am convinced they are simulated by this condition—catarrh of the colon—and a great many cases are primarily colon catarrh with spread of the mucus into the appendix."

The experience of another practitioner whom I know as having carefully watched cases of colitis, is very interesting. He practises in the Farnham district which, as stated by the medical officer of health, has an alarming increase in the number of cases of appendicitis. He tells me that colitis is fairly common in his practice, and gives a striking example of its association with appendicitis as shown in the following cases which were under his care:—

E. C., aged 12 years, who had suffered from colitis for several months, had an attack of appendicitis which lasted five days, then resolved. Six months later another attack of appendicitis, very acute; operation by Mr. Edmund Owen 48 hours after first symptoms showed themselves; gangrenous appendix; died 24 hours after operation.

H. C., aged 10 years, suffered from colitis, had an attack of appendicitis; operation within 18 hours of initial symptoms by Mr. Edmund Owen. Large swollen appendix containing small stercolith was removed; uninterrupted recovery.

S. C., aged 8 years, suffers from colitis. These are the only three children of a mother who suffers from colitis.

My own experience of colitis being possibly infectious is limited, but in the discussion on colitis at the Medical Society last March I stated I believed that there was some evidence that it was so. I have at the present time in two instances both husband and wife under treatment, one of the two husbands having been operated on for appendicitis. Not long ago I received a letter from the doctor of a patient, who was here for colitis and whose appendix had been removed, telling me the aunt of the patient had developed the disease, and asking if it was infectious. The two lived together alone. Three attendants who give the intestinal douches at the Royal Baths have suffered with colitis insomuch that I have insisted upon formalin being added to the ejecta before their examination takes place. It is more than probable the bacillus coli is the active organism in bringing about the disease in certain circumstances of the individual. That treatment by high irrigation is most successful there can be no doubt, and I would strongly suggest that this should be done at home if a visit to a health resort cannot be accomplished. This, however, without every effort to overcome constipation afterwards will not avail for long, and the diet must be free of everything which may irritate the sensitive mucous membrane. In conclusion, my impression is that if chronic constipation and its attendant colitis were better recognised and treated we should hear less of appendicitis, but I entirely agree in urging the question of pure food as a preventive measure.—I am, Sir, yours faithfully,

ALFRED MANTLE, M.D. Durh., M.R.C.P. Lond.,
Consulting Physician to the Royal Halifax
Harrogate, June 18th, 1910. Infirmary.

To the Editor of THE LANCET.

SIR,—I notice with great interest Dr. Donald Hood's thesis in THE LANCET of June 11th last, stating that in his opinion appendicitis is contagious. Dr. Hood does not state whether he refers to the simple, specific, or the malignant variety.

Perhaps one may be permitted briefly to refer to some of the many points connected with appendicitis which tend to prove the contagious theory of this disease untenable, at all events at present. 1. No single case of appendicitis has yet been shown to be directly attributable to contagion. 2. No pathogenic micro-organism has yet been demonstrated capable of reproducing appendicitis. 3. In appendicitis there is sufficient evidence present to account for the disease, whatever the degree or variety; amongst the commoner causes being concretions, foreign bodies, kinks, hernia, volvuli, intussusception, injury, extension of inflammation, worms, parasites, &c.

The occasional apparently endemic or epidemic nature of appendicitis appears to me to be due to one or more of the following causes: (*a*) The strenuous life with its sequelæ, including most varieties of indigestion and bowel irregularity; (*b*) predisposition, both hereditary and acquired; (*c*) disregard of the rules of dietetics and hygiene in persons predisposed to the disease; (*d*) disregard of the early warning physical signs and symptoms cardinal to appendicitis; (*e*) muscular exercises at all ages when the appendix region is the seat of early inflammation; (*f*) appendicitis is more frequently diagnosed (both as to the degrees and varieties of this highly protean disease) than formerly.

I am, Sir, yours faithfully,

London, W., June 18th, 1910. F. G. LLOYD.

ALCOHOLISM AND OFFSPRING.

To the Editor of THE LANCET.

SIR,—As there appears to be some misapprehension on the subject, may I point out that in the recent investigations of Miss Elderton and Professor Karl Pearson the alcoholism referred to as existing in the parents is evidently not the chronic intoxication which has been commonly supposed to be a cause of filial degeneracy? In Miss Elderton's memoir, when the parents are described as alcoholic it merely means that in the opinion of the social workers "they are drinking more than is good for themselves or their homes." That this is not quite the same thing as suffering from chronic poisoning is shown by the fact that in one of the two series of statistics used in the memoir—a report by the Charity Organisation Society on an elementary school in Edinburgh, specially selected for its "widely representative character"—over 64 per cent. of the boys are said to have alcoholic fathers and over 34 per cent. alcoholic mothers. Even in the wildest excesses of the teetotal imagination it has hardly been asserted that alcoholism is prevalent anywhere on the scale suggested by these figures. It may be further noted that in Miss Elderton's memoir no reference is made to the very important question whether the parents' "alcoholism" existed prior to the birth of the children. An inquiry working on data of this sort, however interesting it may be in other respects, does not seem to be quite accurately described as a study of the influence of parental alcoholism. I am, Sir, yours faithfully,

June 25th, 1910. W. C. SULLIVAN.

OVARIAN DERMOIDS AND THE RESULTS OF THEIR RUPTURE.

To the Editor of THE LANCET.

SIR,—In an annotation in THE LANCET of June 25th, under the above heading, you state that "the after-histories of cases in which cysts have ruptured into the peritoneum are always interesting." I hope, therefore, that the notes of the following case will prove so.

On April 2nd, 1909, I saw, with Dr. L. K. Harrison of Leicester, an unmarried girl, aged 24 years, who nine hours previously had a sudden attack of acute pain in the abdomen with vomiting. The pain gradually got worse and the patient developed signs of acute general peritonitis. There was nothing in the anamnesis of any value in making a diagnosis. The abdomen was very rigid and tender; liver dulness was present. The lower abdomen was opened in the median line, when the peritoneal cavity was found full of caseous lumps floating in slimy, grumous, slightly blood-stained liquid containing hair and some bony fragments, which had evidently come from a large multilocular ovarian dermoid on the left side which had ruptured. This was removed with the left tube and the abdominal cavity was wiped out and irrigated. The right ovary was slightly enlarged but was not interfered with. The abdominal wall was completely closed in layers. Recovery was rapid and complete, the wound healing by first intention. I saw her again with Dr. Harrison on Sept. 6th, 1909; she had been quite well since the operation until the last few days, when she noticed slight difficulty and pain with micturition, and two days previously she had acute pain in the lower abdomen and back. The abdomen was rigid and tender and a small elastic nodule was felt at the bottom of the scar, another just to the left of the scar, and a larger indefinite mass beneath the middle of the left rectus muscle. Per vaginam, a hard, tender mass was felt in

Douglas's pouch. The girl was in great pain, the temperature being 101° F. and the pulse 110. Under ether the old scar was excised and the nodule was found to consist of soft vascular growth which extended into the abdominal cavity so much and was so vascular that nothing further was done, the wound being closed. After this the patient went rapidly "down hill" and died on Nov. 2nd.

A piece of the growth was sent to the Clinical Research Association, who reported: "This growth must be malignant, but its exact nature is rather doubtful. The outstanding characters of it are those of an embryoma, such as would arise in the ovary and produce secondary growths. It is composed of masses of cells in a delicate stroma, with gland-like spaces here and there dilated by solid ingrowths. There are no epithelial 'pearls' and the structure does not resemble an ordinary carcinoma or sarcoma."

I am, Sir, yours faithfully,

Leicester, June 26th, 1910. F. BOLTON CARTER.

THE ADMINISTRATION OF ANÆSTHETICS AND THE V-SHAPED UPPER JAW.

To the Editor of THE LANCET.

SIR,—I would suggest that all anæsthetists before administering an anæsthetic should examine the mouth of their patients, not for the presence of false teeth, but in order to see whether the upper jaw is properly formed, as in all cases of V-shaped upper jaw and arrangement of teeth there is certain to be trouble with the breathing when the early stages of insensibility are reached. In the worst cases, which are not infrequent, the administration of the anæsthetic has to be stopped and the mouth opened with a mason's gag to get the tongue forward. This, hurriedly done, and with some force, is apt permanently to loosen some of the side teeth. Were a well-made broad prop used in these cases to keep the mouth open, and carefully placed between teeth able to bear the pressure, the tongue could be easily got at, and the anæsthetist, forewarned, would no doubt adopt other measures of a precautionary nature during the administration, about which he is much better informed than,

Yours truly,

JOHN FAIRBANK,
Consulting Dental Surgeon, Charing Cross Hospital.

George-street, Hanover-square, W., June 18th, 1910.

THE SANATORIUM TREATMENT OF PHTHISIS.

To the Editor of THE LANCET.

SIR,—Four years ago you published a letter from me on the above subject drawing attention to the extravagant waste of money on the erection of permanent buildings for the treatment of consumption. I then ventured to suggest that if the advanced cases were properly isolated and cared for we would, in another 25 years, hear very little of this fell disease. It appears to me that it would be as logical to say that mild cases of scarlet fever, typhoid fever, and diphtheria should be removed to isolation hospitals, but all severe cases of these diseases must be treated at home, as it is for us to continue our present attitude in the treatment of phthisis. Firstly, only "suitable cases" are admitted into our sanatoria. By "suitable cases" are, I understand, implied such cases as show the early stages of phthisis, and if I may be allowed to extend this interpretation, such cases as would with proper care and treatment almost certainly get well at home. All these cases are of low infectivity. Secondly, all "advanced cases" are rejected. "Advanced cases" are, I suppose, those who have cavity formation, free expectoration, and are of poor vitality—in fact, all the cases of high infectivity. We therefore have the position clearly defined for us—namely, that all cases of mild phthisis, with good chances of recovery, may be admitted into a sanatorium; but all cases with advanced disease—those, in other words, who are the greatest danger to the community—must remain at home and continue to spread the infection.

A remote member of the profession such as I am should not, perhaps, have expected that any notice would be taken of my former letter, but when a giant like Sir James Barr voices a similar expression of opinion, as he did at the Tuberculosis Exhibition held in Liverpool last week, then I am encouraged to return to the attack. Sir James Barr said: "There was no necessity for any more public sanatoria. The results had not been at all commensurate with the expense. But what was really wanted were homes for the dying where advanced cases could be well cared for and kept from infecting others." I welcome this statement and cordially agree with every word of it, and I would even go further and say that I am convinced that were such a system adopted many of the, at present, rejected cases might recover and become useful citizens instead of being sent home to die and infect others.

I have no desire to belittle any good that may have been accomplished by present-day sanatoria, but I have good reason to believe that many cases have been admitted into these institutions and have soon returned home as "cured of phthisis" when there was reasonable doubt that any tuberculosis existed at all. This is a great question and should be discussed. I hope I shall not again find myself in a lone furrow, but even if I do I will again venture to trespass on your columns.—I am, Sir, yours faithfully,

BOUVERIE F. P. MCDONALD, M.D. Edin.

New Brighton, Cheshire, June 20th, 1910.

MEASLES AND THE POST-OFFICE AUTHORITIES.

To the Editor of THE LANCET.

SIR,—Your correspondent Dr. S. R. Collier is most undoubtedly wrong in saying that actual contact is necessary for the spread of *infectious* disease as distinguished from contagious disease. With a professional experience of over 50, and as a medical officer of health for over 30 years, I can recall many instances of scarlet fever and measles having been introduced into a house by a person coming from an infected one and not having the disease. Small-pox is notoriously conveyed by the air alone. Medical men do not introduce infectious disease into their own or other peoples' houses owing very much to the fact that, as a rule, they are only a short time with the patient, and their clothes, &c., do not become impregnated; but I remember a painful case in which a doctor had two patients living only a short distance apart, one a case of confinement, the other scarlet fever, and one morning he visited both cases, and unfortunately the scarlet fever first, the result being that the lady died from puerperal septicæmia. Many years ago I had measles introduced into my own house by an old nurse coming from an infected house. This is not very likely to occur now, but before the days of local boards and district councils it was not so very uncommon. But I repeat most emphatically that actual contact is *not* necessary for the spread of infectious disease, especially small-pox, scarlet fever, measles, and diphtheria.

I am, Sir, yours faithfully,

WILLIAM G GROVES,
Woodford Green, June 22nd, 1910. Medical Officer of Health.

To the Editor of THE LANCET.

SIR,—In his letter under the above heading Dr. Nash observes that it is quite a common practice nowadays to permit children over seven years of age who have previously had measles to attend school even if living in an infected house. May I suggest that this common practice, which apparently has the sanction of the educational authorities, is one which may not infrequently be responsible for the spreading of infection? For, apart from the fact that it is by no means uncommon for children to have a second attack of measles, there is the fact that in the poorer and more crowded districts of large towns, where epidemics of measles are rife and the mortality most high, the two forms of measles—viz., morbilli and rubella—are synonymous terms to the minds of the parents of these children, and it appears to me a highly dangerous practice to allow children of an infected family who on the mere statement of parents, as ascertained by the school teacher or inspector, have had *some* form of measles, to attend school and so become a focus for the spreading of infection.

I am, Sir, yours faithfully,

June 28th, 1910. ROBERT A. FRYER.

A UNIQUE OBSTETRICAL EVENT.

To the Editor of THE LANCET.

SIR,—The interesting paragraph in the Vienna letter in THE LANCET of June 11th headed "A Unique Obstetrical Event" reminds me of Dr. Whaley's case,[1] although this was a case of a monocephalic iliadelphic monster and not a case of twin-sisters. A woman, with one head and one body, was double from the waist downwards; she had two navels, two external genital organs, and four legs; she could walk on the two external legs only, the two internal ones being too small and too short. She married and became pregnant in her left side. Owing to some dangerous symptoms, and fearing the pelvis would be too contracted, Dr. Whaley had a consultation with Dr. Haden and Dr. Aldridge. They decided to induce premature labour at three and a half months. The patient recovered perfectly.

I am, Sir, yours faithfully,

Geneva, June 15th, 1910. A. CORDES, M.D. Paris.

INTENSE PIRQUET'S REACTION WITH ULCERATION CURED BY HORSE SERUM.

To the Editor of THE LANCET.

SIR,—This case became available just too late to be added to my paper which you published in THE LANCET of June 25th on the treatment of ulcers by horse serum. It illustrates not only the arrest of auto-cytolysis by the antitryptic power of normal horse serum, but also a complication of Pirquet's reaction of which I have seen no record.

The patient was a well-nourished child, aged 2½ years, who for four weeks had had slight fever and a doughy abdomen, probably due to tuberculous peritonitis. The cuti-reaction was tested with undiluted old tuberculin, as my house physician, Miss S. E. Buyers, who has had considerable experience of this test, found that negative results were unduly frequent with the 25 per cent. dilution. The response was very violent, though with no indication of septic invasion. In a week an ulcer was visible which on the fourteenth day had raised edges and a diameter of 18 mm. The base was polished and showed no sign of granulation or attempt at healing. It seemed, in fact, a sluggish, spreading cytolytic ulcer of the forearm of unusual type. On the sixteenth day horse serum was applied locally on gauze. On the eighteenth day granulations were visible, and on the twenty-first day there was an ingrowth of healthy skin from the edges, and healing became well established.

Incidentally I may add that we have tried the Moro's tuberculin ointment test somewhat extensively in the Children's Hospital here and have abandoned it owing to the rarity of positive reactions as controlled by Pirquet's test.

I am, Sir, yours faithfully,

Hull, June 25th, 1910. FRANK C. EVE.

ATROPINE IN THE TREATMENT OF TETANUS.—We published an annotation on this subject in THE LANCET of May 21st, 1910, p. 1430. We said we had received a letter giving an account of two cases of tetanus from Dr. R. F. Secoresto of Barbados. We should have said "from Dr. R. F. Licorish, of Barbados." Our correspondent's signature was not at all legible, and the local list in the Medical Directory gave no clue. We much regret the error, but are relieved to learn from Dr. Licorish's humorous letter of expostulation that we are by no means the only persons who, failing to decipher his signature, "have played havoc with the name again and again."

[1] American Journal of Obstetrics, 1888, p. 1265.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A Vacation Course will be held in connexion with this College from Sept. 12th to 23rd inclusive. The course will include demonstrations on recent clinical methods, demonstrations of groups of selected clinical cases, clinical lectures and lantern demonstrations, and clinical consultations. The inclusive fee will be 2 guineas. Full particulars may be had from the Dean at the Prince of Wales's General Hospital, N.

THE HOUSING PROBLEM AT LIVERPOOL.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Liverpool, June, 1910.

LIVERPOOL, as already explained,[1] has laid out broad thoroughfares and planned residential quarters in the midst of uninhabited fields, and this was done long before the Town Planning Act was promulgated. Such promptitude was the result of a reaction against the abominable state of things which had been allowed to grow up in the city without any check or interference. With the development of the cotton manufactories in Lancashire, Liverpool, as the port where the cotton from America was landed, grew in importance. The need for cheap manual labour in the docks increased in due proportion, and then narrow streets with courts and alleys, cellar dwellings, and back-to-back houses were built as near as possible to the water's edge for the use of all these poorly paid casual labourers and dockers. To this must be added the fact that some 80,000 Irish who fled from the potato famine in 1845 landed and settled in Liverpool *en bloc*, accounting for a very large Irish colony which still remains in the city. Of course, when they arrived, penniless and starving, from their famine-stricken country, they had to accept the worst paid work, and indeed they did not possess the technical knowledge necessary to earn anything above starvation wages. All this contributed to create the slums for which Liverpool became unfortunately celebrated. These were the classic haunts of typhus fever; the home of drunkenness, immorality, and crime; and the cause of an appallingly high death-rate. Every backyard in the districts inhabited by the labouring class was built upon, as well as every green space. Nothing was done practically to control these building operations. In 1846, the year following the Irish invasion, a law was enacted with the following title: "An Act for the Promotion of the Health of the Inhabitants of the Borough of Liverpool, and the Better Regulation of Buildings in the Said Borough." Beyond the closing of a few cellar dwellings the Act effected very little real improvement, and the same may be said of a similar Act passed four years earlier. The first measure of genuine use was passed in 1854, under which it became an illegal act to construct any more houses of the worst type. But the speculators in slum property had foreseen this legislation and had erected thousands of the vilest court dwellings just a year or two before such structures were pronounced to be illegal. In the first instance nothing could be done by which existing insanitary property might be removed; the new legislation only sought to prevent the increase of existing evils. Ten years had to elapse before an effective law dealing with the past could be added to that which dealt with the future. This is a strange commentary on the legislation of a practical people. Here were slums with a death-rate of 60 per 1000 per annum. They were veritable hot-beds of zymotic disease, especially of typhus fever. These slums constituted centres of physical and moral contamination for all, and not only for the numerous seafaring population attracted to the port. Yet, instead of at once taking in hand the existing mischief, the law was directed only against evils which might possibly come into being at some future day. We are only told by the law of 1854 that in future labourers' dwellings must be built on a better plan.

How the Slums were First Attacked.

After this pronouncement ten years elapse, each with its swollen death-rate due to the typhus-stricken slums, and at last a law is enacted which does deal, not with grievances that may arise, but with the monstrous conditions actually prevailing. The Liverpool Sanitary Amendment Act of 1864 gave the corporation of Liverpool extensive powers for the acquisition of insanitary property, and was a very advanced piece of legislation, at least for those days. Much of the re-housing of Liverpool has been carried out under this Act, and it has proved a most useful measure. The means of procedure established by this law were as follows. The Act specifies certain sort of houses which the medical officer of health, if he thought proper, might condemn as unfit for human habitation. In that case what is called a "presentment" was made to the grand jury at quarter

[1] THE LANCET, June 18th, 1910, p. 1718.

sessions. The owner of the property was summoned to make what defence he could, but if, in spite of this, the grand jury agreed that the houses were not fit for habitation, the town council was empowered to pull them down and to purchase the land if the owner was willing to sell. Fortunately, in practice the owner in almost every case was willing to sell his land, and when this was purchased by the town council care was taken that only suitable cottages were built on the site where the old slums stood. Nevertheless, the re-housing was not successfully managed at first. Private speculators undertook to build upon the cleared land, but the rents charged in the new dwellings thus erected were much higher than those paid for the old houses. Consequently the old tenants could not return but went to further overcrowd such slum tenements as had not yet been demolished. This extra overcrowding was possible as the insanitary property was only pulled down gradually. In 1864 there were 22,000 houses that could be condemned as unfit for human habitation, and by the year 1883 only 7000 of them had actually been so condemned and demolished. But there had been other influences at work besides the legal action of the corporation. Railways, industrial enterprises, owners of warehouses and offices for various businesses were bidding for some of the land where the insanitary houses stood, and the owners of the latter found it more profitable to sell out. Some 40 per cent. of the unhealthy buildings which the local authority should have caused to be condemned under the Act of 1864 were sold to railway companies and business firms. The new owners pulled down the slum dwellings and replaced them by business premises. But as it was not their duty to re-house the dispossessed inhabitants the overcrowding of such poor tenement dwellings as still remained available became even more intense.

The Slow Process of Reconstruction.

The local Act of 1864 possessed one serious defect which interfered especially with plans for rebuilding. It only dealt with absolutely insanitary houses, and not with an area. Thus there might be in a street or area a few houses which, not being unfit for habitation, could not be condemned or dealt with in any way. These few houses might be so placed as to prevent the widening of some thoroughfare and the laying out advantageously of the cleared area. This difficulty, however, ended with the adoption of the Housing of the Working Classes Act of 1890, which authorises the compulsory clearing of a whole area even when the buildings are not all insanitary. In 1902 a house-to-house inspection was made and it was then found that 9943 houses still remained that could be condemned under the old local Act, and this though the corporation had dealt with about 8000 such houses and some 4000 more had been purchased to provide sites for business premises. Some years later application was made to the Local Government Board for a loan so as to effect further demolitions, but the Board inquired whether the tenants who had been turned out of the condemned dwellings were provided with other homes. Though the Local Government Board only required that such accommodation should be provided for 50 per cent. of the disturbed tenants, it was found, as the result of an inquiry made in 1899, that 3056 persons had not been able to secure tenements. Therefore the Local Government Board made it a condition before sanctioning any further loan that provision should be made for these dispossessed tenants. Thus, but only gradually and at a comparatively recent date, has the policy of re-housing become an integral part of the policy of dealing with insanitary areas. The first result of pulling down unhealthy houses was to make matters worse by increasing the overcrowding of the houses that remained. Then the builder would not, and did not, rebuild on the sites rendered vacant the sort of dwellings to which the old inhabitants could return. Yet the corporation itself during the first 21 years since the passing of the Act of 1864 only built one estate. This is known as the St. Martin's Cottages. They contain 124 tenements and were opened in 1869. The second municipal building, the Victoria-square Dwellings, were not opened till December, 1885, and they contain 270 tenements. The rents vary from 1*s.* 9*d.* per week for one-roomed tenements to from 4*s.* 9*d.* to 5*s.* 6*d.* for three-roomed tenements. The process of building municipal tenement houses began, it will be seen, very slowly. It may be said that it took 20 years to get fairly under way, but now it is going forward without let or hindrance and no one challenges its wisdom. Indeed, it is not a question of choice. No one will undertake the work, so it must be left undone or the corporation must do it. The last published figures as to the accommodation provided by the corporation are dated Dec. 31st, 1908. There were then 15 blocks or estates, which comprised in all 193 one-room tenements, 1017 two-room tenements, 779 three-room tenements, 178 four-room tenements, in all 2170 separate tenements. Of these, and at the above date, 2092 were occupied. There were 5295 rooms, 5020 rooms being inhabited by 7782 persons, which gives an average of 1·55 per room. There were also 20 shops. If every inch of available room in these tenements was occupied it is calculated that they could hold 10,590 persons, but there is always a small number of tenements unoccupied; and, fortunately, the tenants do not always crowd their habitations to the utmost allowed.

Rents and Poverty.

In all such enterprises a municipality is faced by a dilemma. Either a good class of tenants is accepted at competition rentals, and then the income will suffice to gradually refund the capital expenditure and yield a profit, or else the best tenants will be systematically excluded and their offers of higher rent rejected. The latter is the only course possible if public health is the object in view. When a slum is pulled down its dispossessed inhabitants have to be re-housed, and this cannot be done on commercial lines. The corporation of Liverpool has fully realised this fact and repudiates all idea of housing slum dwellers at a profit. The 5 per cent. philanthropists had already made the attempt and signally failed. They have abandoned the field, and local private enterprise will not touch the situation—for they understand. The bulk of the men with whom the corporation of Liverpool has to deal, when attempting to solve the housing problem, are labourers, generally dock labourers. There is a floating population of some 20,000 to 30,000 dock labourers at Liverpool and the docks provide work for 15,000 to 18,000. It is true that the historic dockers' strike won for them the "dockers' tanner"; and if they could get five or six days' work a week they would be fairly well off, but two days' work a week is the more general average. The docker will earn 10*s.* in two days, and be searching and waiting in vain for work during the remainder of his time. A single man earning an average of 10*s.* a week cannot do more than take a one-room tenement and pay 1*s.* 9*d.* rent per week. If he is married then his wife must work, and she will have to work the whole of the week for 8*s.* to 10*s.*; thus the joint earnings produce scarcely £1 on which, perhaps, to rear a family. And £1 a week is comparative affluence for this class. According to the opinion of some of the Poor-law guardians there are several thousand families in Liverpool who subsist on 10*s.* a week. 15*s.* to £1 is the exception rather than the rule among the labouring classes and poorer sections of the working class. Such poverty tends to the creation of slums and it is useless to expect anything but the very lowest rents from these ill-paid workers. Thus the weekly rent of the municipal tenements has been fixed at 1*s.* 9*d.* for one room to 5*s.* 6*d.* for the largest tenement provided. But any number of well-paid skilled artisans and some shop assistants or clerks would be glad to pay a higher rent than this for the accommodation provided. All such applicants are and must be systematically refused.

Re-housing the Slum Dwellers.

To be accepted as a tenant of the municipal dwellings it is necessary to show that the applicant inhabited a house that was demolished by the sanitary authority, or had been proceeded against in consequence of living in insanitary conditions, or had been turned out of a cellar dwelling. These conditions qualify for admittance; after that the tenant must pay the rent and so far keep sober as not to create any disturbance. So great are the advantages of being a municipal tenant that several persons have deliberately overcrowded their homes or elected to reside in cellar dwellings in the hope of being proceeded against by the sanitary authority and of thus qualifying themselves for admission as tenants in the corporation or municipal tenements. It is said that those who have reached the lowest depth of misery have lost all ambition and are incapable of making any effort to raise themselves. The experience acquired in Liverpool does not

confirm this pessimistic view. On the contrary, the municipal tenements are the scene of a veritable process of resuscitation. The fact should be obvious to the most casual visitor. If it has not received more notice this is simply due to the circumstance that very few people know or can be brought to believe that the inmates of these smart, clean, bright-looking houses are the very same people who used to dwell in the old crime-besmirched, fever-stricken slums which were till recently the shame of Liverpool. The effect produced has been twofold. First the slum dwellers have been reformed by being allowed to live in the model tenements built for them on the same spot, and secondly the surrounding houses which have not been pulled down have improved. Where these are let out for lodgings a local law compels their registration. At first it was necessary to give 250 cubic feet of space to each tenant. Then this was raised to 300, then to 350, and the rule now is that there must be 400 cubic feet per adult and 200 cubic feet for every child under 10 years of age. To see that this law is enforced the sanitary inspectors made, in 1907, 22,982 night visits to the houses which are sub-let. This resulted in 962 convictions for overcrowding, or 4·18 convictions per 100 visits. In 1909 the number of night visits was 23,534, and of convictions 576, a percentage of 2·44. The percentage of convictions during the present year only amounts to 2 per cent. on the number of night visits made. Thus in four years the proportion of convictions to visits has been reduced by one-half.

The Resuscitation of the Submerged.

This means the raising up of entire districts, and these the very worst districts in Liverpool. It means an improvement along the entire line—less crime, less drunkenness, less immorality, less dirt, and less disease. Here are some figures which were given by the head constable to Mr. Fletcher T. Turton, F.S.I., the deputy surveyor. Taking as an example an infamous area quite near to the centre of the town, it had a population of 1393 inhabitants before any demolition was effected. Between the years 1894 and 1904 all the houses were pulled down and rebuilt. The newly constructed dwellings contain a population of 1246 persons. In this particular area there were in 1894 27 prosecutions for drunkenness, ten for assault, and 25 for other offences, making a total of 62 prosecutions during the year. In 1904 when the area was rebuilt, and inhabited, as we see, by nearly the same amount of persons, there were five prosecutions for drunkenness, none for assault, seven for other offences, giving a total of only 12 prosecutions.

Another most encouraging feature in these municipal tenements is the fact that the occupants realise that it is a great privilege to dwell in them. They therefore make extraordinary efforts not to forfeit this advantage. In spite of their extreme poverty they contrive to pay the rent; more than 90 per cent. of the rent due is collected and this compares very favourably with any class of tenantry. Then they take pride in their rooms; the door-knockers and the brass round the letter-box are polished with jealous care; the windows are kept clean, and even the poorest manage to get a little bit of white window curtain. All this is of the utmost importance, for such are the symptoms of self-respect, of a newly developed love of home and an orderly existence. It is the first dawn of refinement and cleanliness which, when properly encouraged, may with its rays pierce the gloom of even the most abject poverty. In regard to the health of these people in their new surroundings, Dr. E. W. Hope, the medical officer of health of Liverpool, says in his last annual report that the mortality from pulmonary tuberculosis in the municipal dwellings, notwithstanding the deplorable history of the occupiers, only amounts to 1·35 per mille in 1907–08. This figure is lower than that of the city taken as a whole, and very much below that of the districts in which the dwellings are situated. These statistics demonstrate the improvement achieved in general sanitation as well as in regard to the special disease mentioned. Of course, the tenants of the municipal dwellings are closely watched, they are reproached when found to be exceptionally untidy, and all kinds of measures are taken to encourage the spirit of emulation, so that there shall be rivalry in cleanliness and general smartness of appearance. Life is changed for these people, new-found ideals are engendered, and what used to be the most forlorn and downcast class in the city, a class as abject as any to be found in the kingdom, is awakening to splendid hope, born in the midst of its better surroundings.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The St. Mary's Hospitals.

THE St. Mary's Hospitals, the result of the amalgamation of the old St. Mary's Hospital with the Southern Hospital, whose aim—the treatment of the diseases of women and children—was similar, are not in a good financial position. The constituent hospitals were almost at opposite ends of the town, so that their patients came from different districts, but it was thought well that they should join forces, and through the generosity of the late Mr. Manasseh Gledhill a new hospital was built in the Oxford-road, very near the ground on which the new Royal Infirmary now stands, at a cost of £50,000. But at present the hospital cannot be opened for lack of funds. To justify the opening an assured income of £5000 is needed. At the annual meeting Dr. (now Sir Alfred) Hopkinson made a strong appeal on behalf of the hospital, and Sir F. Forbes Adam announced that the surviving trustee of the Gledhill estate had offered £5000 to defray the cost of furnishing, so that the public was only asked to provide sufficient for the upkeep.

Fatal Accident to Dr. Alfred Francis Thompson.

Dr. A. F. Thompson, senior anæsthetist at the Royal Infirmary, honorary anæsthetist at the Dental Hospital, and assistant anæsthetist at the Manchester Ear Hospital, met with a fatal accident on June 25th. He was sitting beside his chauffeur, and was driving his motor, a landaulette, when at a crossing near Hale, Altrincham, the car came into collision with a taxicab and was turned over, the occupants being thrown out. Dr. Thompson, whose skull was fractured, died almost immediately. Mrs. Thompson and three relatives were in the car, and several persons were in the taxicab, but no one except Dr. Thompson was seriously hurt. The taxicab was only going at a moderate pace, but there was some rather contradictory evidence given at the inquest on June 27th as to the pace at which the motor-car crossed the main road. The verdict of the jury was "Accidental death," but they "recommended that the responsible authorities should be asked to erect a danger signal in Park-road to warn drivers that they were approaching a main road." Much sympathy is felt for Mrs. Thompson in the death of her husband. He was only in his thirty-second year, and leaves, besides his widow, two small sons.

A Difficult Diagnosis.

An inquest was held on June 27th on the body of a man who died from the effects of a fall downstairs on June 20th at his own house in Hulme. He could not rise without help, and complained of pain in his left side. He was taken in an ambulance to the infirmary soon after midnight, and was brought home before 2 A.M. on a stretcher, in the care of a policeman. Later in the day he again went to the infirmary in a cab. He was wheeled from the cab to the accident room, and after his injuries had been attended to returned home in a cab. It was said that he had to wait for a time before he received attention, and that his wife expressed her belief that he was not fit to go home, but the patient said he would walk. On getting home again a medical man was sent for, who gave him an order for the Withington Workhouse Hospital, where he died on the 23rd. At the infirmary the injury was diagnosed as fracture of two ribs, and this was confirmed by Dr. F. Da Cunha at the workhouse, who said the sixth and seventh ribs were fractured. He did not think the case particularly serious, but the man became worse and pneumonia set in. Internal examination showed that the third, fourth, and fifth were also fractured, and the sixth had scratched the pleura, but had not penetrated the lung. The jury returned a verdict of "Accidental death," but they considered that the man should not "have been turned out in his condition at that early hour of the morning, knowing, as the doctors must have done, that he had broken ribs." If otherwise fit to be moved, as he was considered to be at the infirmary, it does not appear why the early hour of the morning should have been injurious to him. These unfortunate cases are a source of great anxiety to hospital residents. There is generally no space whatever in the hospital to allow for their detention with the idea of watching for developments.

June 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The World's Missionary Conference.

DURING the past two weeks Edinburgh has been the scene of the meetings of the World's Missionary Conference, and though Scotland has long been accustomed to great assemblies of religious bodies of one kind or another, the gathering which has just taken place has been to onlookers an amazing revelation of missionary spirit and enterprise.

By some strange oversight no commission was appointed to consider the problems of medical missions. To repair this oversight a series of three sectional meetings was held during the second week of the Conference, at which matters bearing on medical missions were discussed. A series of papers which had been prepared as a basis for discussion were distributed to the medical men and women attending these meetings. Dr. J. W. Ballantyne (Edinburgh) wrote on the Training of Medical Missionaries; Mr. W. McAdam Eccles (London) on Elementary Training in Medicine for Foreign Missionaries; Dr. C. F. Harford (London) on Organisation of a Home Medical Department of a Foreign Missionary Society and the Scope of its Work; Dr. G. Basil Price (London) on the Need for the Home Base (Medical Department) to Systematically Collect and Record Statistics such as Relate to the Health of Foreign Missionaries; and Mr. D. D. Main (Hangchow) on Medical Education in China. A paper on the Training of the Missionary Nurse, prepared by the executive of the Nurses' Missionary League, was also considered. There was a good attendance at the meetings, and though the subjects under discussion demanded a much longer time for their consideration than was actually available, the feeling of the meetings was fairly well expressed in the findings arrived at.

On the question of the Training of Medical Missionaries, opinion was unanimous that the medical missionary could not be too highly trained in his profession. Intending medical missionaries were advised to undertake further study after graduation in such subjects as ophthalmology and tropical diseases. It was also suggested that a practical experience of hospital work as a resident, either at home or on the field, was desirable before undertaking the duties of a medical mission station for the first time. Several of the missionaries spoke on the advisability of attending post-graduate courses when home on furlough, and suggested that missionary societies should give grants for the purpose of encouraging this practice among their members. Several speakers referred to the difficulty which a medical missionary in charge of a large hospital has in undertaking satisfactorily the whole of the evangelistic work in this connexion; and some speakers considered that the medical missionary, if engaged in extensive medical work, ought to be relieved of the main part of the evangelistic work. Dr. Ballantyne in his paper referred at length to the work of the Edinburgh Medical Missionary Society, stating that this society has for some years encouraged all its students to study for the M.B., Ch.B. degree of the University, with the result that at present 21 of the 23 students of the society are working for the degree. In the training of missionary nurses the necessity for efficiency was again insisted on. All agreed that missionary nurses should have the full three years' training in a general hospital, with additional thorough training in obstetrics. Speakers also emphasised the fact that in the case of both doctors and nurses a thorough knowledge of the language was as necessary as in the case of other missionaries.

The subject of Elementary Training in Medicine for Foreign Missionaries was taken up at an evening meeting in the hall of the Royal College of Physicians. The paper presented by Mr. McAdam Eccles advocated a nine months' course of instruction in medicine for missionaries going to isolated districts where medical aid was unattainable. Of the nine months, three were to be devoted to elementary chemistry, anatomy, and physiology, together with methods of case investigation and the rudiments of materia medica and bandaging. In the succeeding three months the elements of medicine and surgery would be studied, with practical clinical work in the wards and out-patient department of a hospital and in the clinique of a medical mission. The third term of three months would be occupied by the study of special medical matters, including an elementary practical course in diseases of the eye and of the skin. Instruction in special hygiene, nursing, and cooking, dentistry, tropical diseases, and occasionally midwifery, was also advisable. Missionaries with this training were not to be allowed to take the name of "medical missionary," nor to undertake positions of medical responsibility. A short course of three months might be arranged for missionaries going to districts where skilled medical aid was not far distant. In this three months' course instruction in first-aid, hygiene, tropical diseases, cooking, and nursing was desirable. The proposal of organising a preliminary education of this kind for non-medical missionaries met with considerable criticism, some missionaries speaking strongly of the tendency of partially-trained men to undertake responsibility and work for which they were entirely unfitted, and pointed out what a great danger there was of bringing lasting discredit on the cause they were working for by such a course of action. The meeting appeared to be agreed that while a knowledge of hygiene and first-aid was of value to all missionaries, the training given in nine months was either too much or too little—too little if a man were to undertake medical responsibility, too much if he were to be confined to the practice of first-aid and the use of simple remedies. Disapproval was expressed of the policy of sending missionaries to isolated districts where medical aid was inaccessible. It was generally agreed that all missionaries should have such knowledge as would enable them to preserve their own health and that of their families. In the cases where a missionary was to be sent to an isolated district the opinion of the majority was that a knowledge of the treatment of accidents and the use of simple remedies was advisable and that such knowledge should be acquired at a recognised missionary institution.

At the same meeting Dr. Harford spoke on the Organisation of a Home Medical Department of a Foreign Missionary Society. Dr. Harford based his interesting paper on the discussions during the past five years of the Association of Medical Officers of Missionary Societies. In the course of his address he emphasised the desirability of every missionary society having a definitely organised home medical department. This department, he suggested, should consist of a medical officer who should be a paid official under a medical board, of which he should act as secretary and to which matters of difficulty could be referred. The work of such a board would be to consider the selection of candidates and to supervise the health of missionaries abroad. The board should consist of retired medical missionaries, retired practitioners from abroad—either civil or military—and practitioners in medical practice at home.

Dr. Basil Price's paper dealt with the need for the Systematic Collection of Statistics relating to the Health of Foreign Missionaries, and showed the great value of collecting data bearing on such matters.

In the third of the sectional meetings Medical Education of Natives in Mission Centres was the subject under discussion. Mr. Main (Hangchow) spoke on medical education in China. The other speakers were Dr. Wanliss (Miraj), the Rev. Dr. D. Christie (Moukden), Dr. J. Van Someren Taylor, Dr. J. H. Cook (Uganda), and Dr. Sheppard. The speakers on the situation in China pointed out strongly that in view of the present awakening in that empire and of the increasing demand for Western knowledge, the development of the missionary medical colleges there offered a great opportunity, since the Christian men they trained now would be ready to take the lead in the great educational movements which were coming. The missionary colleges already existing were to be improved and extended, and the missionaries asked for the most able men this country could supply, but men who also, in Mr Main's words, "would teach the Christian faith by word and deed," to occupy posts on the staffs of these colleges. Several speakers repeated what had before been insisted on in reference to evangelistic work—namely, that the medical reformation of China could only be brought about by native agencies. On that account it was imperative that missionary societies should aim at thorough efficiency in their native medical schools.

Dr. Edith M. Brown spoke of the work done in Ludhiana in training native Christian girls as hospital assistants and compounders.

A large medical missionary meeting was also held in the Synod Hall on the afternoon of June 22nd. Addresses were given by Sir Donald MacAlister, who presided, Dr. Cook (Uganda), Dr. Wanliss (Miraj), the Rev. Dr. Christie (Moukden), and Professor A. Macalister (Cambridge). It is to be hoped that in view of the great interest of these discussions to medical missionaries a full report will be included in the reports of the work of the conference.

Victoria Jubilee Cullen Prize.

The Victoria Jubilee Cullen prize for the greatest benefit done to practical medicine, which is awarded by the Royal College of Physicians of Edinburgh once in four years, has this year been awarded to Dr. R. W. Philip for his work on tuberculosis.

Amateur First Aid.

Mr. Wilson, Home Office factory inspector at Glasgow, in his report for 1909 mentions that owing to the heavy burden of compensation insurance, particularly in the ship-building and engineering trades, attention has been focussed not only on the causes of accidents but their after-treatment. Minor injuries had proved often very costly due to septic poisoning supervening, and it was discovered that unskilled cleansing and disinfecting of the wound at the works was chiefly responsible for this. A large federated body of employers has now a standard of appliances provided at every one of its works, and, among other things, each dressing is sealed up in an envelope by itself. In the event of an injury the antiseptic dressing is removed from the envelope by means of a pincers, the wound is bound up, no attempt being made at washing or disinfecting, and the patient thereafter sent direct to a medical man or to the infirmary. The financial saving which has resulted from this attention to minor injuries has been so striking that federated employers in other parts of the country who are their own insurers are copying the system.

The Treatment of Measles in Dundee.

The treatment of measles was dealt with at a meeting of a subcommittee of the public health committee of the Dundee town council on June 24th. It was resolved to recommend the town council to provide the necessary accommodation for the treatment of urgent and serious cases. A piece of ground to the south of King's Cross Hospital was considered suitable on which to erect a pavilion for measles and another for phthisis, together with the necessary administrative buildings. The city engineer and the town clerk were instructed to negotiate with the proprietors.

Motor Accident to an Arbroath Medical Man.

On June 18th Dr. J. D. Gilruth of Arbroath along with his wife and two children had a miraculous escape from injury. The party was motoring from Arbroath to Elliot when, after passing through the railway bridge and taking the sharp turn on to the straight of the Dundee-road at the Old Toll, the car was suddenly turned from the left side to the right in order to avert a collision with a powerful motor, belonging to Hawick, proceeding in the opposite direction. The sudden swerving had the effect of overturning the car, and the occupants were thrown out. Dr. Gilruth was pinned underneath the car, but escaped with only slight bruises to his arms and legs. The children also were partly under the car, but along with Mrs. Gilruth, who was thrown clear, they escaped with nothing more serious than a slight shock. The body of the car was badly damaged.

Donation of Shelters for Consumptives.

At a meeting of the Aberdeen county district committee held last week it was intimated that Dr. J. P. Watt, the county medical officer of health, had received from an anonymous donor two revolving moveable shelters for the use of patients suffering from pulmonary phthisis. The meeting resolved to record its thanks for this generous donation.

Low Death-rate in Aberdeen.

Dr. Matthew Hay, medical officer of health of the city of Aberdeen, reports that for the month of May last there were in the city 187 deaths, equal to an annual rate of 11·9 per 1000. This is probably the lowest recorded for any month of May. The rate for the corresponding month in the preceding ten years was 15·7. The mean age of all persons dying during the month was 46·0 years, as against an average of 36·4 for the corresponding month in the preceding ten years. In regard to the mortality among infants under 1 year, there were only 22 deaths, as against an average of 47 for the month of May in the preceding five years.

Oldmill Poorhouse Medical Officership.

Owing to the death of Dr. J. J. Y. Dalgarno, the post of visiting medical officer to the Oldmill Poorhouse, Aberdeen, has become vacant, and the question of future arrangements is being discussed between the Local Government Board and the Aberdeen parish council. Dr. Dalgarno, as visiting medical officer, was allowed a salary of £70 per annum, and there is attached to the institution a resident medical officer, meantime a woman, at a salary of £80. Taking this opportunity, the Local Government Board strongly advises the appointment of two resident medical officers. The Board holds that there is need in so large an institution of a resident medical officer of experience and standing, and suggests £250 or thereby as salary to procure a capable man. Under him it recommends a junior resident, and for this post, which might be held by a man or woman, a salary of £80 is suggested. In support of this it is pointed out that the average number of inmates is about 650, of whom 250 are always requiring medical attention. In addition to this there is the large workhouse staff. In similar institutions in the south it is usual to have senior and junior residents, and a special ward set aside for cases of an unpleasant character from the male wards with male nurses. The poorhouse committee, however, regards a modification of the present arrangement as all that is necessary. Subsequently, at a meeting of the poorhouse committee of the Aberdeen parish council it was decided to appoint a visiting dispenser at £40 per year, to raise the salary of visiting medical officer to £100 per year, thus enabling him to attend oftener and to visit every patient at least once a week, and also to undertake the lectures to probationers. These findings passed by a substantial majority. A representative of the Local Government Board attended the meeting.

June 28th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Ireland and the Midwives Act.

LAST week a conference on the subject of the Midwives Act was held in Dublin, in which representatives of the following bodies took part: Royal College of Physicians, University College, Galway, Royal Academy of Medicine, Irish Medical Association, Rotunda Hospital, Coombe Hospital, and Holles Street Hospital. Representatives of the Royal College of Surgeons, Queen's University, and University College, Cork, had also been appointed but found it impossible to attend. The Registrar-General and the medical member of the Local Government Board were also present. After considerable discussion, it was unanimously decided to demand that the provisions of the Midwives Act should be extended to Ireland. A committee, consisting of Sir William Smyly, Mr. A. J. Horne, and Dr. F. W. Kidd, was appointed to draw up a statement for presentment to the Chief Secretary. It would seem that the unwillingness to receive the Midwives Act into Ireland has dissipated, and the decision of the conference must, in the absence of any decided voice to the contrary, be regarded as the expression of Irish professional opinion. In a letter to a contemporary Sir William Smyly argues strongly in favour of the extension of the Act to Ireland. His main point is that puerperal mortality in Ireland is unduly high, and that as statistics have shown an improvement in England since the Midwives Act came into force, so we might hope for improvement in Ireland if midwives were officially registered and inspected.

Royal Sanitary Institute.

A provincial sessional meeting of the Royal Sanitary Institute was held in Trinity College, Dublin, on June 24th, Colonel J. Lane Notter, R.A.M.C., deputy chairman of the council of the institute, presiding. The subject under discussion was the Water-supply of Towns, and Mr. J. H. H. Swiney, M.I.C.E., dealt with it with special reference to the problems of maintenance and working. He argued in favour of upland catchment water rather than rain-water as a supply for Irish towns. He urged that the Local Government Board should exercise a close supervision over completed

works, and by frequent chemical and bacteriological examinations see that the water was kept up to a proper standard of purity. Professor E. J. McWeeney discussed the Bacteriological Examination of Water. The papers were discussed by Sir John W. Moore, Mr. George M. Ross, B.E., Professor Adeney, and Mr. P. C. Cowan, C.E.

Memorial to the Late Professor Cunningham.

The model for the memorial to the late Professor Cunningham, which was intrusted to Mr. Oliver Sheppard, R.H.A., is now completed, and it is hoped that the bronze portrait panel will be cast and placed in the School of Anatomy, Trinity College, Dublin, before the opening of the coming winter session. It will be remembered that the memorial fund will be used to defray the expenses connected with this portrait and to provide a memorial medal and prize to be awarded annually in anatomy. As it is proposed shortly to close the subscription list, friends and pupils of the late professor who desire to contribute are requested to communicate with the honorary treasurer or honorary secretaries of the Cunningham Memorial Fund, Trinity College, Dublin, at an early date.

Extraction of Teeth by an Unregistered Dentist: Death from Hæmorrhage.

A representative of a firm of "teeth specialists" practising in Cork attended at Bantry on Saturday, June 18th. A Miss Collins, an assistant school teacher, called on him and had four incisors and two molars extracted. She was bleeding when leaving him and went to the house of a friend in the town. Whilst there she fainted twice in the course of about two hours. The dentist was then sent for, and as his endeavours to stop the hæmorrhage were ineffectual, in the evening Mr. T. Bennett was called in. The bleeding was very persistent and Mr. Bennett only succeeded in stopping it some hours afterwards. As it started afresh from time to time during the next day he called Mr. T. Popham to see her in consultation with him on Monday, but in spite of the efforts of both medical men the poor girl died on Wednesday morning, June 23rd. At the inquest Mr. Bennett stated that he had noticed several patches on the body indicating that the deceased was suffering from purpura hæmorrhagica. In reply to a question he said he would not, having regard to her state of health, have extracted six of her teeth. The coroner remarked that the dentist was unregistered and that the facts revealed a scandalous and dangerous condition of affairs. The jury found that death was caused by hæmorrhage resulting from the extraction of six teeth by an unqualified dentist, deceased not being in a physical condition to be operated on. They tendered their sympathy to the relatives of the deceased and strongly condemned the action of "unqualified men going around the country doing the work of qualified dentists."

The Abbey Sanatorium, Belfast.

Mr. Robert Hall, physician to the Belfast Union Infirmary and the Abbey Sanatorium for Consumptives, has presented an interesting report to the committee of the latter institution on its working during the half year ended March 29th, 1910. During this period of six months, 516 patients were under treatment, 251 of whom were discharged, leaving all the beds (265) occupied at the close of the half year. 26 patients were discharged as greatly improved, 100 as improved, 39 as not improved, 15 were not long enough in the sanatorium, and 71 died. The general average age of the patients in the sanatorium was 30, and the general average duration of stay was 147 days. The youngest patient was 9 years old and the oldest was 68 years. Regarding the occupation of those discharged, 64 were labourers, 35 housekeepers, 14 spinners, 9 stitchers, 8 school girls, 6 doffers (workers in spinning mills), and 6 clerks. It is interesting to note that a large number of the patients in the pavilions slept on the verandahs during the winter nights with advantage; and Mr. Hall asks his committee to erect a verandah around the front of the hospital block, which would enable some of the patients to have the advantage of sleeping in the open air when thought desirable, and would form a more hygienic shelter in wet weather than remaining in the sitting-room as at present. Appended to the report is an interesting financial statement showing the cost of the Abbey Sanatorium. The average cost of each patient per week was 13*s.* 10¼*d.*, and if to this be added 3*s.* 4¾*d.* for repayment of loans, the cost is 17*s.* 3*d.*, which is less than in the corresponding period of 1909, when it was 17*s.* 10¼*d.* This sanatorium is the largest Poor-law institution for consumptives in the three kingdoms, is doing an admirable work, and it is a great credit to the progressive spirit of the Belfast board of guardians and an example to the rest of the country. When the report was presented the committee in charge of the sanatorium approved of the erection of a verandah around the front of the hospital block, and it has also wisely agreed to try Welsh coal at the sanatorium to avoid smoke and dust.

June 28th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Pulmonary Embolism subsequent to an Injection of Grey Oil.

AT a meeting of the French Society of Dermatology and Syphilography held recently M. Verchère described an alarming case which, in his opinion, deserved attention, even if it did not raise some doubts relative to the treatment of syphilis by means of grey oil. The patient was a female, aged 18 years, who had suffered from syphilis for five months and had already in his wards received four injections of grey oil. The fifth injection, given with all the usual precautions, was as painless as its predecessors, but 48 hours afterwards the patient complained of a pain in her left side, accompanied by a sensation of nausea. The pulse was irregular and thready, but there was no rise of temperature. The symptoms were considered to be due to pulmonary congestion of influenzal origin. When they had continued for two days with slight dyspnœa but without any rise of temperature the patient had a sudden attack of vomiting, after which she uttered a cry and fell dead. Several members of the society who were present at the meeting took part in the discussion; they all remarked on the necessity of the greatest care in the therapeutic use of grey oil both as regards the dose of the remedy and the method of administering it. It was absolutely necessary to give the injection in two successive stages so as to make sure that the needle had not entered a vein.

An Election at the Academy of Medicine.

The Academy of Medicine has elected a *membre titulaire* in the section of medical pathology. The honour fell to Professor Gaucher, who received 61 votes out of a total of 68 that were given.

Hygiene of Pregnancy.

Pregnancy is very often accompanied by illnesses of various kinds, and childbirth may be attended with complications dangerous to the health of both mother and infant when they are not recognised and treated in good time. In order to protect herself from accidents which she cannot herself foresee every pregnant woman would be well advised if she consulted a medical man periodically without waiting for the onset of labour. The managing body of the Assistance Publique has recently by means of suitably displayed posters announced that pregnant women of the poorer classes may have free advice at the maternity hospitals. Even though they may not intend to become in-patients when labour is imminent, they are invited to seek advice with regard to the progress of their pregnancy.

Fatal Effects of Chloroform Inhalation in Cases of Hepatic Disease.

The Surgical Society has at three successive meetings discussed the danger of chloroform inhalation in cases of hepatic disease. M. Quenu in introducing the subject described the hepatic lesions which were produced by chloroform, and said that in cases of hepatic disease the danger of chloroform inhalation was particularly great when jaundice was present; from whatever cause the jaundice might arise there was an increase of it during the next few days and there was evidence of toxic effects produced by bile; after an operation these jaundiced patients had also a great tendency to hæmorrhage. All these ill-effects being due to the chloroform, M. Quenu said that he no longer administered it to such patients, but he employed ether, which was not followed by aggravation of the jaundice or by toxic symptoms. M. J. L. Faure mentioned a typical case in which, after an inconsiderable operation performed under chloroform, the patient died in 48 hours. M. Chaput said that two patients under his care had

died from a similar cause. M. Reynier said that in his opinion the exact cause of the fatal result could not be always ascertained. M. Lucas-Championnière said that it was an exaggeration to attribute to the chloroform every case of jaundice occurring in a patient who had been operated on, for jaundice had been known to disappear after chloroform anæsthesia. M. Poncet said that chloroform undoubtedly had a toxic action on the healthy as well as on the diseased liver; he also remarked that it was often very difficult to ascertain the exact cause of a death after an operation; he considered that as a general anæsthetic ether was in any case to be preferred to chloroform. M. Sieur, a military surgeon, mentioned the case of a man aged 24 years, an alcoholic subject, to whom it was necessary to give chloroform for the application of a fixation apparatus to a fractured patella. After the operation the man vomited incessantly, was slightly jaundiced for several days, and although there was no important rise of temperature he had a pulse-rate of 110. The jaundice increased progressively, anuria and delirium supervened, and the patient soon died. At the necropsy splenomegaly was found, as well as enlargement of the liver and kidneys.

Radiology in Legal Medicine.

M. Béclère, speaking at a meeting of the Society of Legal Medicine held on June 13th, said that an examination of a case by means of the X rays ought to include both radioscopy and radiography. In the former the visual result varied according to the incidence of the rays with respect to the lesion, whilst radiography supplied a permanent record of the best of the radioscopic views. A radiograph might be a valuable piece of evidence, provided that it was correctly taken and properly interpreted. Some cases were difficult to interpret, and an expert who was not a radiographer might misunderstand an X-ray picture. In this connexion M. Béclère mentioned a case of fracture of the radius sustained by a milkman who attributed it to a machinery accident. There was a conflict of opinion among the medical men as to the existence of a fracture with impaction of the fragments. A radiographer, not a medical man, after taking a picture said that there was no fracture. The medical experts diagnosed a fracture on account of the shortening, but could not say if it was recent. M. Béclère was then instructed to take a new picture. By comparison with the sound limb and by methodical interpretation of the picture he showed that there was an old fracture which was not due to the accident in question, but was of much earlier date. In order that a radiograph might be of value it ought to be accompanied by a certificate describing the conditions under which it was taken and giving its medico-legal interpretation.

Vaccination against Typhoid Fever.

Professor Vincent has found that animals were completely immunised against the infection of typhoid fever if they had previously received injections of extracts of living bacilli. Injections of this antityphoid vaccine were then given to 13 persons, all adults. It was very well tolerated and imparted powerful bactericidal properties to their blood serum, so that bacilli mixed with their blood underwent a sort of solution, becoming granular and unrecognisable. Inoculation on a culture medium was not followed by growth, the bacilli being in fact killed. The serum of a vaccinated person showed this bactericidal power, even when it was diluted to 1000 times its volume. Persons who have received injections of this vaccine were therefore protected in a high degree against the microbe of typhoid fever.

The Disturbances at the "Concours de l'Agrégation."

The disorderly scenes which took place on the occasion of the Concours de l'Agrégation were mentioned in this column on June 11th, and it has to be added that several medical societies have now addressed the Dean of the Faculty of Medicine, congratulating him on his action during these unpleasant circumstances. Communications to this effect have been sent by the Society of Hospital Surgeons of Paris, the Society of Hospital Physicians of Paris, and the Lyons Faculty of Medicine.

June 28th.

THE Royal Academy of Medicine of Turin has elected Dr. Roux, Professor of Anatomy in the University of Halle, an Honorary Member.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Annual Meeting of Swiss Medical Men.

THE Annual Meeting of Swiss Medical Men, which was attended by over 200 practitioners, was held at Zürich on June 3rd and 4th. On June 3rd Dr. Baer demonstrated by optical lantern enlargements of radiograms of the thorax illustrating the great advances made during the last ten years. Incipient phthisis can be diagnosed, tumefied bronchial glands can be demonstrated, and deep-seated small infiltrations come to light. In short, these X ray photographs prove a most important accessory in modern physical diagnosis of the chest, often also as regards prognosis. Professor H. Zangger, professor of legal medicine in Zürich, demonstrated very clear photographs of the organisms of recurrent fever and syphilis. On June 4th Professor H. Eichhorst spoke on so-called epidemic or meningococco-meningitis, which has not left the canton of Zürich since 1906. Every year from 15 to 28 cases have occurred. The mortality is very high, notwithstanding the specific serum treatment. He also demonstrated a very rare case of alkaptonuria in a man 60 years of age. Professor Kroenlein demonstrated a number of interesting surgical cases: a perforated gastric ulcer, a ruptured spleen, two rare cases of rupture of a goitre due to external injuries, and a very serious case of foreign body (false teeth) which had perforated the œsophagus and caused acute mediastinitis. All the patients had recovered. He also demonstrated a large diverticulum of the œsophagus removed under local anæsthesia; a patient successfully operated on for abscess of the brain; a patient, aged 83 years, from whom he had removed a large cancerous tumour of the kidney 25 years ago; and another patient operated on 12 years ago for polycystic tumour of the kidney, the tumour weighing 19 pounds. The meeting closed with a dinner, which was well attended, and with a trip by steamer down the lake.

Swiss Congress for the Consideration of the Midwife Question.

This conference took place on Nov. 30th and Dec. 1st at Bern, and the report of the proceedings has now appeared. The Federal Department of the Interior invited medical delegates from all the Swiss cantons to confer on the reform of the organisation of midwives in Switzerland. Twenty-three cantons had sent 33 delegates. Dr. Schmid of the Swiss Federal Department of Hygiene was elected chairman. One of the questions of special interest referred to the illegal production of abortion, the rate of deaths from this cause having trebled from 1901 to 1907, rising from 0·6 to 1·8 per 100,000 inhabitants. The following suggestions were made: 1. Better choice of midwives, with an improved standard, physical, moral, and educational. 2. Improved and more uniform instruction at hospitals of at least half a year's duration. 3. Repeated courses of instruction for midwives. 4. Higher fees, the fees of the poor to be guaranteed by the local authorities; from 15 to 20 francs (12*s.* to 16*s.*) for conducting a normal labour in poor cases, and a minimal fee of from 20 to 30 francs (16*s.* to 24*s.*) in other cases. 5. Special grants of from £12 to £30 a year to induce midwives to settle in sparsely populated and mountainous districts. 6. Insurance against sickness and accidents. 7. Strict legal measures to prevent the practice of uncertified midwives.

June 25th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Convocation at McGill University.

THE chief feature of the convocation proceedings at McGill University, Montreal, on June 9th, was the address of Dr. Wesley Mills, who for 25 years has been professor of physiology and who is retiring on account of ill-health to take up residence in Germany. Dr. Mills, in his vigorous, outspoken address, considerably startled the governors and professors of the University. He stated plainly that McGill and Montreal were not in sympathy; that the citizens practically took no interest in their university; and that Montreal, and, indeed, Canada, was satisfied with material prosperity and commercial advancement, and took no particular thought of

the higher life of her citizens. He criticised especially the teaching of medicine, declaring that students were given a great deal too much to digest, and that they should be taught less and taught better, and so become men first and medical practitioners afterwards. He thought there were too many men on the Medical Faculty who gave at least two-thirds of their time to their private practices, and that medicine of the future would demand men who could devote their whole time to investigation and education. At the close of Dr. Mills's speech Dean Francis J. Shepherd read an address expressive of the regrets of the Faculty at parting with Dr. Mills, and presented a purse of gold on behalf of the Faculty. The degree of LL D. was conferred on Admiral Sir Archibald L. Douglas *in absentiâ*, who, although he had crossed the Atlantic for the purpose of receiving the honour in person, was detained in New York through illness. Two degrees were conferred in circumstances hitherto without precedent in the history of McGill, one being the honorary degree of M.D., C.M., upon Miss Maude C. Abbott, B.A., M.B., the first woman to receive this degree from McGill, and the degree of Musical Bachelor upon Miss Beatrice Donnelly. The resignation of Dr. William Gardner from the chair of gynæcology was announced; Dr. Gardner has occupied this chair for 27 years and for eight years previously had occupied the chair of medical jurisprudence. Dean Shepherd announced the accession to the staff of Dr. J. C. Simpson as professor of embryology and histology. The official opening of the new medical buildings has been postponed for a year owing to the death of King Edward. Dr. Thomas A. Robinson, the winner of the Holmes gold medal, delivered the valedictory address to the graduating class.

Annual Meeting of the Canadian Association for the Prevention of Tuberculosis.

The seventh annual meeting of the above association was held in Montreal on June 7th, under the presidency of Professor J. George Adami of McGill University. In his address Professor Adami advocated the formation of Protestant institutions, similar to those of the Catholic Sisters of Quebec, for the purpose of caring for tuberculous sufferers. Referring to the oft-repeated fact that more females grew up to mature years than males, he thought the Roman Catholic system of the convent solved one of the great dangers of society. Could some of these women but devote their lives to forwarding a noble work and establishing a sisterhood for the care of incurable cases of tuberculosis they would emulate the good example of their Catholic sisters. Professor Adami paid a high tribute to the work which the Catholic Sisters of Quebec were doing throughout that province in the care of indigent and incurable cases of tuberculosis, specially instancing the Sisters of Providence, who had been most active in the fight against the disease. Major-General George M. Sternberg of Washington, D.C., delivered an address "On the Housing of the Working Classes as a Factor in the Prevention of Tuberculosis." One of the pioneers of bacteriology on the continent of America, Major-General Sternberg has been an earnest advocate of better housing for the poor. He has already accomplished good work in removing plague spots from some of the cities of this continent. He believed that the reduction in the death-rate was simply due to the better housing of the working classes, and that with the abolition of the slums and crowded tenement districts tuberculosis would receive a staggering blow. He detailed at considerable length the system of house-building which has been inaugurated at Washington and spoke of the good results which have been obtained there.

The Canadian Medical Association.

A resolution favouring the transfer of the *Montreal Medical Journal* to become the journal of the Canadian Medical Association, as soon as the Finance Committee could make satisfactory arrangements with the board of governors of the said journal, was carried at the recent meeting of the Canadian Medical Association. Dr. Andrew Macphail will continue as editor. Montreal was selected as the place of meeting of the Association in 1911, with Dr. George E. Armstrong as President-elect and chairman of the Executive Council. Dr. James Bell (Montreal) was elected chairman of the Finance Committee. Dr. George Elliott (Toronto), after nine years' service as general secretary, retired, and Dr. E. W. Archibald, 190, Peel-street, Montreal, was elected to succeed him. Dr. H. B. Small (Ottawa) was re-elected treasurer.

June 20th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

The American Medical Association.

THE Sixty-first Annual Session of the American Medical Association, which was held in St. Louis from June 6th to 10th, though smaller as regards the number in attendance than either the Chicago session (1908) or that of Boston (1906), must undoubtedly be written down a success. The registration was only 4077, but it is estimated that there were some 600 to 1000 in attendance who did not take the trouble to register. This is probably due in large part to the fact that the registration bureau was at quite a little distance from both the section meeting-places and the principal hotels. The opening meeting was held at the Odeon Theatre, which easily seats 2400 people, and there did not appear to be a vacant seat. Colonel William C. Gorgas of Panama introduced the incoming President, Dr. William H. Welch of Johns Hopkins University, who in his address dwelt on the necessity for animal experimentation, against which at present a violent campaign is in progress in this country, the need of more complete vital statistics, the importance of establishing a national department of public health with a secretary in the Cabinet, and the necessity for elevating the general standard of medical education. The scientific sessions were well attended and some notable papers were contributed. The Oration on Medicine was delivered by Dr. R. C. Cabot of Boston, who gave a study of mistaken diagnoses based on the necropsy findings in 1000 cases. In this section there was a symposium on the Circulatory Disorders in Acute Infections, in which Dr. W. G. MacCallum, Dr. George Dock, Dr. Joseph F. Miller, Dr. S. R. Richards, and Dr. W. S. Thayer, among others, took part. The Section on Obstetrics had four symposia. In the first, the inventors of various operations for retroversions and retroflexions of the uterus discussed the various operative measures. This discussion was participated in by Dr. Tod Gilliam, Dr. Goldspohn, Dr. Wesley Bovée, and Dr. Howard Kelly. The second was on Enteroptosis, in which Dr. Musser, Dr. Ochsner, and Dr. Goffe took part. The third dealt with Carcinoma of the Uterus, and included among the speakers Dr. Harvey Gaylord, Dr. J. A. Sampson, Dr. Emil Ries, and Dr. C. C. Frederick. The fourth was on Eclampsia. The chairman's address in this section, by Dr. John G. Clark of Philadelphia, was on the Embryologic and Anatomic Causes for Obstinate Constipation in Women and Operative Methods for its Relief. In the Surgical Section the chairman's address, by Dr. Charles H. Mayo of Rochester, Minn., was on the Prophylaxis of Cancer. Dr. Robert Abbe of New York delivered the Oration in Surgery, summarising the present status of radium in surgery. He stated, *inter alia*, that radium had never failed to cure cancer of the lip in the seven years he had been using it. In the Section on Ophthalmology an interesting address, which was listened to with great attention by a very large audience, was that by Mr. J. Herbert Parsons, F.R.C.S., of London, on The Effect of Bright Light on the Eyes. In the Section on Preventive Medicine an interesting feature was the symposium on Hookworm, Pellagra, and Typhoid Fever. Dr. John D. Long of Washington, D.C., combated the spoiled-corn theory of pellagra and cited the microscopical findings in the stools to prove that the cause was to be found in a microbe inhabiting surface water and vegetables. Dr. Charles W. Stiles of Washington took part in the discussion on hookworm. In the Section on Dermatology several cases of pellagra in various stages were shown. The Scientific Exhibit contained several noteworthy displays, among which may be mentioned that of Dr. W. W. Graves on the "scaphoid scapula," illustrating, by the contrast of normal bones with those of "scaphoid" type, by embryological specimens, &c., his thesis that this type of scapula is a more or less definite pathological entity, due, according to him, to anomalies of development dependent on some constitutional taint in the progenitors. It is a curious fact that in the "De Humani Corporis Fabrica" of Vesalius (Basle, 1543), which was exhibited in the Historical Exhibit, the three scapulæ figured as typical all belong to what Dr. Graves calls the "scaphoid" type.

The exhibit of the St. Louis Medical History Club was a veritable museum, such as has perhaps never appeared as part of a medical convention before. It occupied a large room, and contained various incunabula—Albertus Magnus, Avicenna, Guy de Chauliac, William Harvey, Mundinus, and Tycho Brahe.

Three editions of Eustachius—Amsterdam, 1722; Rome, 1728; Leyden, 1761—were there, as also the first editions of Columbus Realdus, Bartholin, Barthelemy Cabrol, Malpighi, Vesalius, and many others too numerous to mention. In addition to the books was a collection of medical portraits, including many fine engravings, old diplomas, seals, medallions, busts, surgical instruments and appliances, &c. The entire collection was furnished by the members of the club, with the aid of the St. Louis Medical Library and the Washington, St. Louis, and Missouri State universities. The association, through its House of Delegates, supported the principle of the Owen Bill to create a national department of public health, with a secretary having a seat in the Cabinet. Of late years there has developed considerable opposition among members of the American Medical Association to an alleged dominating "ring," which is said to control the politics of the association, and through it of the profession at large in the United States. This opposition has given rise to a great many personalities. At the present session Dr. Simmons placed his resignation as secretary before the House, which was accepted. At the election of officers, however, he was unanimously re-elected to the post by a rising vote, not a single delegate refraining from voting or voting adversely. For the presidency Dr. Abraham Jacobi of New York and Dr. J. B. Murphy of Chicago were nominated, Dr. Murphy being elected. The association adopted a resolution in favour of the passage of State laws abolishing the office of coroner and dividing the medical from the legal functions, allotting the former to a medical examiner and the latter to the district attorney, according to the plan that has for some years been in successful operation in Massachusetts. Another resolution attributed the alarming increase in suicides in part to the publication by the lay press of details thereof, and urged legislation denying the use of the mails to newspapers that published such details. A gold medal was awarded to Dr Claude A. Smith of Atlanta, Ga., for his researches on hookworm. It was resolved to create a Section on Genito-Urinary Diseases.

Other organisations that held their annual session in St. Louis during the meeting of the American Medical Association were the National Committee on Ophthalmia Neonatorum, the Academy of Medicine, the American Urological Association, the American Medical Editors' Association (at which both the retiring and the present presidents of the American Medical Association spoke), the National Federation of State Licensing and Examining Boards, the American Association of Medical Examiners (before which Dr. Liston H. Montgomery of Chicago read a paper on Longevity, in which he expressed the opinion that the average length of human life might be lengthened to 120 years by careful attention to the following points: the elimination of quacks and unprincipled physicians, the abolition of poorly equipped hospitals and medical schools, the enforcement of the Pure Food and Drug Acts, cold storage regulation, Government inspection of all dairies and abattoirs, municipal sanitation under Government inspection, publicity and education of the public through literature especially in relation to venereal diseases, the electrification of all railways and the abolition of the smoke nuisance, and closer inspection of all immigrants), the American Association of Medical Milk Commissions, the Medical Library Association, the Baltimore and Ohio Association of Railway Surgical Surgeons, the American Proctologic Association, and the American Gastro-Enterological Association. The following distinguished foreigners were present as guests of the association: Dr. Holger Hygind of Copenhagen, Dr. Paul Fleischmann of Berlin, Mr. J. Herbert Parsons, Dr. A. Primrose of Toronto, and Dr. Alfred Saenger of Hamburg.

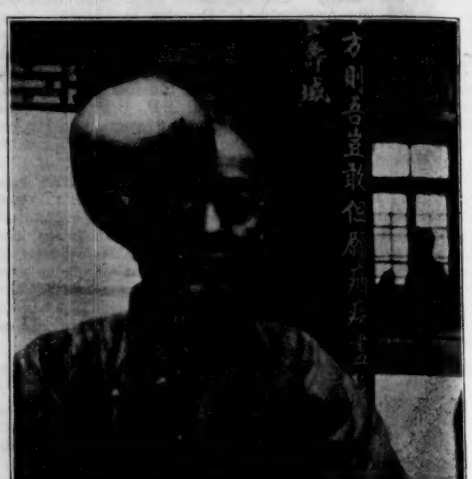
June 21st.

NOTES FROM CHINA.

(FROM OUR OWN CORRESPONDENT.)

Cranial Sarcoma.

A CHINAMAN came to hospital asking for removal of a cranial growth (see illustration). His history was that the tumour had first appeared three years ago. When about the size of a turkey's egg, two years later, he had asked a foreign medical man to remove it, but operation was refused. On returning to his village a native "doctor" had acupunctured it in three places. This was done about six months ago and had resulted in a steady acceleration of the growth. The skin was hairless but intact; there was eggshell crackling as of bony trabecular structure over its whole extent. The growth itself was painless, but latterly he had headache when tired "from the weight of it." The upper right eyelid showed pressure œdema. The tumour on palpation was not hard nor was there any pulsation; it was of the same consistency all over, summit as well as base. As he was beyond operative help he left the hospital, taking with him some phenacetin and caffein citrate powders which gave him great relief when headaches came on. It would be impossible to say whether this was a growth of the pericranium or diploë. There were no symptoms pointing to encroachment on the intracranial cavity; he was bright mentally, and both optic fundi were



normal. There was no involvement of lymphatic glands. The case is interesting owing to the element of traumatic sarcoma introduced by the village charlatan's needling operation. The increase in size was almost imperceptible till the acupuncture, after which it "began to grow one day bigger than another," to use the patient's words.

Health of Shanghai.

The annual report of this, the largest European settlement in the Far East, shows that the public health during 1909 has been satisfactory. There has been continued immunity from human plague; the reason for this immunity, says Dr. A. Stanley, the medical officer of health, is not obvious in view of the constant communication by shipping between Shanghai and infected ports. Vigorous sanitary precautions have been kept up. During the year 92,000 rats were trapped and burnt, and 17,634 rats were found dead and taken to the laboratory; of these latter 187 were plague-infected. People have been encouraged to keep cats, and the building of ratproof houses (steel and concrete) has been advocated whenever possible. A note is made of the absence of any marked degree of opposition from the Chinese, who have coöperated to a greater extent than was expected. The incidence of small-pox has been exceptionally small. Only one case was notified among the foreign resident community. Among the Chinese there were 19 deaths, as compared with 143 and 863 during the preceding two years. Vaccination is done free for all Chinese and indigent foreigners applying at the Health Office. Vaccine is also supplied free to the Chinese hospitals in Shanghai. Although there has been an increase in the number of cases of choleraic diarrhœa the diagnosis of Asiatic cholera caused by the cholera bacillus has not been confirmed by the laboratory, where over 50 cases, foreign and native, were examined. These cases were therefore not held to be true cholera, though the clinical picture and post-mortem signs of both diseases are identical. Typhoid fever remains an important factor, causing a case mortality of 18·9 per cent. Scarlet fever appears to have come to Shanghai to stay. It was practically unknown there prior to 1900, when it was probably introduced by foreign immigrants. As would be expected with a recently introduced disease, against which

evolution has afforded no natural immunity, scarlet fever has been of a virulent type among the Chinese. It is probable that the passage of the disease through the susceptible Chinese has led to an intensification of the virus so that it is more fatal to foreigners also. The prevalence of tuberculosis remains at the same high level. There have been no deaths registered from Malta fever. Quite a number of cases of malarial fever, mostly of the benign tertian type, are contracted in and around Shanghai. As regards beri-beri, the incidence of this disease has increased, deaths from it having occurred in the Municipal Gaol. Dr. Stanley, after close observation of the causes, thinks that the evidence so far preponderates in favour of beri-beri being an infective disease having no direct relation to food, and infective through body vermin. Recommendations regarding the admission of municipal prisoners have been adopted which will settle the latter point. Relapsing fever again made its appearance among the prisoners; it is evidently common in Shanghai among Chinese and to some extent among foreigners. The death-rate per 1000 for the year among foreigners was 16·7 and among Chinese 15·1.

Presentation to Dr. W. J. Milles, M.D. Brux., F.R.C.S. Eng.

Dr. W. J. Milles, who is severing his connexion with Shanghai and returning home after having been for 27 years one of the leading and most successful members of the medical faculty in Shanghai, has been made the recipient of a very cordial leave-taking on the part of his professional colleagues, with whom, as with all Shanghai, he has been very popular. The meeting took place at the house of Dr. W. J. Jackson, and Dr. C. J. Davenport, on behalf of all his colleagues, presented Dr. Milles with a massive Japanese bronze vase. Dr. Milles, in replying, said that when he came to Shanghai there were only eight medical men, while at present they numbered 40. After some interesting reminiscences, Dr. Milles concluded by wishing all present as felicitous a termination to a long and happy professional career as he had himself enjoyed in Shanghai.

Peking, May 25th.

Obituary.

CLAUD MUIRHEAD, M.D. EDIN., F.R.C.P. EDIN.,

CONSULTING PHYSICIAN TO THE ROYAL INFIRMARY, EDINBURGH, ETC.

WE regret to record the death of Dr. Claud Muirhead, one of the senior members of the medical profession in Edinburgh. He had done his usual medical visits and gone to his insurance office on Tuesday, June 21st. Next morning he was found dead in bed, lying calm and peaceful. He had but recently attended, in his last illness, his old friend, Dr. John Smith, whose death he felt keenly. He was in his seventy-fifth year, and by his death the medical profession in Edinburgh loses one of its most eminent and esteemed members. His father was Claud Muirhead, proprietor of the *Edinburgh Advertiser*, a respected citizen of his day. After his school education he entered on the study of divinity under the Edinburgh Presbytery of the Church of Scotland, and completed one year's study. On applying for admission to the divinity classes at the beginning of the second year he was unfortunate enough to fall into the hands of a parson who was known as the bear and bully of the Presbytery of Edinburgh. Muirhead was then, as always, a shy, retiring, reserved man, and annoyed at the rude treatment he had received at the hands of this cleric he abandoned divinity and took to the study of medicine in the University of Edinburgh. He graduated M.D. in 1862. In 1864 he became a Member of the Royal College of Physicians and in 1865 a Fellow. After graduation he studied at Berlin, Vienna, and Paris. He was house physician to Warburton Begbie in the Edinburgh Royal Infirmary in 1864–65. Along with Dr. (now Sir) T. R. Fraser he was in 1869 appointed assistant physician to that institution, chiefly to take the charge of the fever wards. In 1870 he published in the *Edinburgh Medical Journal* an account of Relapsing Fever in Edinburgh, which attracted considerable attention because of the rarity of the disease. In 1876 he was appointed full ordinary physician to the Royal Infirmary. From 1867 for several years he assisted Dr. (afterwards Sir) Douglas McLagan in his private practice. He attended his former "chief," Warburton Begbie, in his last illness and was one of his executors. He taught and lectured on clinical medicine during all the 15 years he was physician to the Royal Infirmary, and he was specially strong on therapeutics. As a "chief" in the Royal Infirmary he was greatly beloved by his resident house physicians. After leaving that institution he was appointed physician to Chalmers Hospital and consulting physician to the Edinburgh Royal Infirmary, to Leith Hospital, and the Chalmers Hospital. For two periods of five years each he was a manager of the Royal Infirmary and acted as convener of the committee of medical managers, where he did excellent work in framing the new regulations. He was medical officer to the Scottish Equitable Insurance Company for a few years, which he left to become chief medical officer of the Scottish Widows Fund, which he continued to be till his death. In this latter capacity he published a valuable monograph on "The Causes of Death among the Assured, 1874–1894." In the *Edinburgh Medical Journal* in 1887 he published a paper on the Treatment of Acute Bronchitis, and in the Edinburgh Hospital Reports a paper on the Treatment of Enteric Fever. He was a member and an ex-President of the Edinburgh Royal Medical Society.

In the old infirmary days he had to deal with several epidemics of small-pox, typhus fever, and enteric fever, and the experience he then gained he turned to excellent use when later he became consulting or visiting physician to the City Fever Hospital, after it was separated from the Royal Infirmary but housed in the old infirmary buildings. He devoted himself entirely to his professional duties. He appeared little at the medical societies or the social functions for which Edinburgh has always been notable. He was too shy and retiring. Like Professor J. Wyllie and Dr. J. O. Affleck, he would not consent to act as President of the Royal College of Physicians when he was chosen in rotation for that honourable position. He was greatly beloved by his patients both in the medical profession and among the general public. He was very genial and very inspiring. His encouraging visit was often better than medicine to the patient. The great sorrow of his life was the death of his wife and only child. He never married again. Latterly he and his brother lived together in Charlotte-square. He was a member of St. Stephen's Church, but he did not take any prominent part in the management of its affairs, though working much privately for the poor of the congregation.

HUBERT ROTHWELL GREENE PASHA, L.R.C.S. IREL., L.R.C.P. EDIN.

Hubert Rothwell Greene, whose death, in his seventieth year, occurred at Dunstable on June 4th, had a distinguished military and official career. He was the youngest son of the late Samuel Greene of Kilmanahan Castle, Co. Waterford. He was educated at Trinity College, Dublin, and studied medicine at the Royal College of Surgeons in Ireland. In 1862 he obtained the L.R.C.S. Irel., and in the following year, after taking the L.R.C.P. of Edinburgh, he entered the Army Medical Service.

During the Afghan war of 1878–80 he acted as secretary to Sir Benjamin Simpson, the Principal Medical Officer, and at its termination was commissioned with the organisation of the medical service in the new Quetta district. In 1884 he served in the Suakim campaign under Sir Gerald Graham, and was especially mentioned in despatches. He was also a member of the Nile expedition party for the relief of Khartoum.

In 1885 he was appointed sub-director of the Egyptian Sanitary Department, and in the following year he retired from the army with the rank of brigade-surgeon. In 1887 he became Director of the Egyptian Sanitary Department and was created Pasha by His Highness the Khedive, being granted the Second-class Order of the Medjidieh. Sanitary reform in Egypt at the time of Greene's administration was crippled by want of money, by the capitulations under which all foreigners were amenable to their own consuls, and by the bondholders. The task which he had before him was therefore no easy one, but he performed it with conscientious zeal and ability, as may be judged from the excerpt which follows from a letter written to Greene in 1890 by the late Sir Gerald Portal, then officiating Agent and Consul-General for Egypt:—

In forwarding to the Foreign Office the Statistical Reports of the Sanitary Department, I have given myself the pleasure of explaining at some length the very great progress made during late years by this

department, which has had to fight its way through severe criticism and constant opposition, and I have submitted to Lord Salisbury the promptness and energy with which during this summer measures were taken to combat a possible invasion of cholera. I take this opportunity of adding my own congratulations on the work which has been accomplished by the department under your orders.

His official services came to an end owing to his becoming very deaf, and this distressing infirmity, occurring when it did, was a drawback to his career which he never surmounted.

Greene Pasha was a frequent and valued contributor to our pages, and it is with great regret that we announce his death.

AMBROGIO MORI.

A BRIGHT career has been suddenly extinguished by the death of this young surgeon who, as *privat-docent* in "operative medicine" at the Florentine Istituto di Studi Superiori and as specialist in children's diseases and pædiatry in Milan, had earned the esteem of the profession and the confidence of a rapidly extending *clientèle* when he succumbed to appendicitis on June 13th after an illness of barely four days' duration.

Born 36 years ago at Brescia, son of an eminent local practitioner, Ambrogio Mori graduated with first-class honours in the clinics at the University of Padua, whence he passed to Florence as assistant in the clinique of obstetrics and gynæcology of the Istituto di Studi Superiori. In this capacity he not only gained a high reputation as second only to his chief, Professor Pestalozza, but was chosen by Dr. Mya, who holds the chair of pædiatry, as his adjutant at the Mayer Hospital for Children. In 1908 his success in this department was such that he was appointed *privat-docent* in the subject, on which he had already published many treatises much appreciated for their originality and practical use. Always well to the front on the occasions, only too common in Italy, of public calamity, he was one of the first to intervene at the Siculo-Calabrian cataclysm, and as medical coadjutor of the Red Cross team, organised at Brescia, he did noble service not only in rescue-work but also in the improvised hospitals for the injured. "Superiors and subordinates at that critical time," says one of his colleagues, "had nothing but praise for Ambrogio Mori."

In the same year (1908) he settled in Milan, while retaining his post as *privat-docent* in Florence, and rapidly won his way to distinction, insomuch that his appointment as Primario of the Milanese Brefotrofio (children's hospital) was within his grasp just as the fatal illness supervened. Another of his charges during the "balneary season" was that of consultant at a Swiss thermal "kur," where, again, he was in high favour with his colleagues and his *clientèle*, who were about to welcome his return when the news of his death arrived. Indeed, something like a "plebiscite of mourning" has followed him to the grave, not the least impressive of the tributes to his memory being the obituary notices of the lay journals, such as the *Nazione* of Florence, the *Perseveranza* of Milan, and the *Sentinella* and *Provincia* of his native Brescia, all of them indebted to his prompt and powerful pen for opportune appeals to the public in aid of the charities, medical and sanitary, whose interests he had at heart. One of these tributes, inspired by affection and solemnised by the suddenness of his decease, sums up the general emotion in words that may well be inscribed on his tombstone—"Memento Mori."

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Oliver P. Rex, formerly lecturer on children's diseases in Jefferson Medical College, Philadelphia.—Dr. Gurny Stubbs, adjunct professor of laryngology and otology in Rush Medical College, Chicago.—Dr. Filipp Joseph Pick, formerly professor of dermatology in the German University of Prague, one of Hebra's oldest pupils, having been born in 1834. He was the founder of the *Archiv für Dermatologie und Syphilis*.—Dr. Ludwig Rosenberg, assistant physician in the Buch Lunatic Asylum, near Berlin, from septicæmia, contracted during a post-mortem examination.—Dr. Ludwig, formerly director of the Heppenheim Lunatic Asylum in the Grand Duchy of Hesse at the age of 84 years.—Dr. James Eisenberg, author of a work on Bacteriological Diagnosis of Diseases Peculiar to Women. His age was only 49 years.—Dr. Aigner of Munich, whose articles on the medical aspect of the Lourdes miracles made some stir several years ago.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in June the following candidates passed in the undermentioned subjects:—

Surgery.—J. Cree (Sections I. and II.), Belfast; W. H. Hooton (Section I.), Leeds; and W. E. North-Smith (Sections I. and II.), Durham and St. Mary's Hospital.
Medicine.—A. C. Dickson (Section I.), Guy's Hospital; E. M. E. Hall (Sections I. and II.), Royal Free Hospital; W. H. Hooton (Sections I. and II.), Leeds; and M. S. Jevons (Section I.), Royal Free Hospital.
Forensic Medicine.—W. J. Gibson, London Hospital; W. H. Hooton, Leeds; G. Meyer, Graz; and C. J. Thompson, Birmingham.
Midwifery.—N. B. Darabsett, Bombay and Middlesex Hospital; A. Y. Massey, Toronto and University College Hospital; T. F. O'Mahony, London Hospital; and C. Pyper, Leyden.

The Diploma of the Society was granted to the following candidate, entitling him to practise Medicine, Surgery, and Midwifery:—J. Cree.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Staff-Surgeon Dr. Napp, of the First University Ophthalmic Clinic, and Staff-Surgeon Dr. Momburg, of the Surgical University Clinic in the Ziegelstrasse, have been granted the title of Professor.—*Freiburg:* Two professors who have recently received more or less tempting offers of chairs elsewhere have declined them, viz., Dr. L. Aschoff, Professor of Pathology and Anatomy, who was invited to migrate to Würzburg as successor to Professor von Borst, and Dr. Axenfeld, Professor of Ophthalmology, who was offered the corresponding chair in the University of Heidelberg in succession to Dr. Leber.—*Heidelberg:* Dr. Wagenmann, Professor of Ophthalmology in Jena, has been offered Dr. Leber's chair on his retirement.—*Jena:* Dr. J. Thiemann has been recognised as *privat-docent* of Surgery, and Dr. W. Brunings as *privat-docent* of Otology and Laryngology.—*Kiel:* Dr. Stargardt, who for some time past has been a member of the teaching staff of the Strasburg University, has now returned to his former position in Kiel.—*Leipsic:* Dr. L. Krehl, Professor in Heidelberg, has accepted the offer of the chair of Special Pathology and Therapeutics in succession to the late Dr. Curschmann.—*Munich:* Dr. E. von Malaisé has been recognised as *privat-docent* of Neurology, Dr. Rudolf Schneider as *privat-docent* of Ophthalmology, and Dr. Max Isserlin as *privat-docent* of Psychiatry.—*Naples:* Dr. Giuseppe Pianise, Extraordinary Professor of Pathological Histology; Dr. Fabrizio Padula, Extraordinary Professor of Surgical Anatomy and Operations; and Dr. Nicola Pane, Extraordinary Professor of Bacteriology, have been promoted to Ordinary Professorships.—*Padua:* Dr. Demetrio Roncali, Extraordinary Professor of External Pathology, has been promoted to an Ordinary Professorship.—*Palermo:* Dr. L. Castellani and Dr. E. Engel have been recognised as *privat-docenten* of Anatomy, and Dr. G. Alagna as *privat-docent* of Otology and Laryngology.—*Parma:* Dr. Giunio Salvi, Extraordinary Professor of Anatomy, and Dr. Ersilio Ferroni, Extraordinary Professor of Midwifery and Gynæcology, have been promoted to Ordinary Professorships.—*Pisa:* Dr. C. Carreras has been recognised as *privat-docent* of Internal Pathology and Dr. Giuseppe Coen as *privat-docent* of Midwifery and Gynæcology.—*Prague (Bohemian University):* Dr. Franz Votruba has been recognised as *privat-docent* of Medicine.—*Rome:* Dr. Giuseppe Calligaris and Dr. Giulio Moglie have been recognised as *privat-docenten* of Neurology.—*Vienna:* Dr. Ernst Fuchs, Professor of Ophthalmology, is about to retire on account of the condition of his health. Professor Fuchs is well known to many generations of English and American medical students, some of whom remember his unfailing kindness and patience, together with his astonishing knowledge of English, as long ago as the "seventies" when he was assistant to Professor von Arlt.—*Zürich:* Dr. Schönholzer has been appointed to the charge of the Institute of Mechanical Therapeutics connected with the Surgical Clinic of the University.

THE NORTHAMPTONSHIRE SANATORIUM.—The Northamptonshire Sanatorium for phthisical cases was opened on Thursday, June 23rd, by the Marchioness of Exeter. The Marquis of Northampton presided on the occasion and Sir Frederick Treves delivered the inaugural address. Dr. P. S. Hichens, who, with Dr. W. M. Robson, was the originator of the scheme for building a county sanatorium, presented a financial statement, in which it was

stated that £6202 17*s.* 9*d.* had already been subscribed. The sanatorium has 22 beds and starts without endowment. The cost of each patient is rated at 30*s.* per week. Dr. Thomas J. Walker of Peterborough and Dr. Hichens have been appointed honorary consulting physicians for Creaton Sanatorium.

MIDDLESEX HOSPITAL.—Her Majesty the Queen has graciously contributed £100 to the Appeal Fund for the Middlesex Hospital; and in a letter to Prince Francis of Teck, the promoter of the appeal, has expressed her best wishes for the success of this endeavour to raise money for the institution.

UNIVERSITY OF LONDON: FACULTY OF MEDICINE.—A meeting of the Faculty of Medicine was summoned for Friday, June 24th, at 5.30 P.M., to consider certain resolutions adopted by the Senate on May 26th last to receive from the appropriate Boards of Studies nominations for appointments to the Board of the Faculty, and to appoint the Board of the Faculty. An insufficient number of members attended to form a quorum so the meeting was adjourned.

BOLINGBROKE HOSPITAL.—At a recent special meeting of the board of governors of the Bolingbroke Hospital, Wandsworth, the following resolution was passed:—

That, having regard to the judgment of the Court of Appeal wherein the gift of £5000 from the Weir Trust Funds to the hospital was described as a misapplication of such Fund, it is the unanimous desire of the governors to restore such sum if possible; and that it will be referred to a committee to consider and report, after taking legal advice, the best steps to be taken to give effect to such desire.

GUY'S HOSPITAL.—The governors and medical staff of Guy's Hospital are giving a garden party on Thursday next, July 7th, at 3.15 P.M., in the grounds of the institution in St. Thomas's-street, S.E. Professor Howard Marsh, professor of surgery at the University of Cambridge, will distribute the various medals and prizes to the students of the hospital. The laboratories, museums, and wards, also the college and the nurses' home, will be open for inspection by the guests during the afternoon.

THE VISIT TO ENGLAND OF AMERICAN SURGEONS.—The following members of the American Society of Clinical Surgery are now visiting England, accompanied in some cases, as will be seen, by their wives:—Dr. Samuel Alexander (St. Louis), Dr. William Bartlett (St. Louis) and Mrs. Bartlett, Dr. A. D. Bevan (Chicago), Dr. Frank Billings (Chicago), Dr. J. A. Blake (New York), Dr. G. E. Brewer (New York) and Mrs. Brewer, Dr. E. A. Codman (Boston) and Mrs. Codman, Dr. G. W. Crile (Cleveland) and Mrs. Crile, Dr. G. C. Davis (Philadelphia), Dr. Ellsworth Eliot (New York), Dr. J. M. T. Finney (Baltimore) and Mrs. Finney, Dr. C. H. Frazier (Philadelphia), Dr. J. H. Gibbon (Philadelphia) and Mrs. Gibbon, Dr. M. L. Harris (Chicago), Dr. L. W. Hotchkiss (New York), Dr. J. P. Hutchinson (Philadelphia), Dr. R. G. le Conte (Philadelphia), Dr. F. B. Lund (Boston), Dr. L. L. MacArthur (Chicago), Dr. Edward Martin (Philadelphia), Dr. Charles H. Mayo (Rochester, Minnesota) and Mrs. Mayo, Dr. J. C. Munro (Boston) and Mrs. Munro, Dr. J. B. Murphy (Chicago), Dr. C. A. Porter (Boston) and Mrs. Porter, Dr. Emmet Rixford (San Francisco), Dr. George Woolsey (New York), and Dr. R. H. Harte (Philadelphia). Dr. Harvey Cushing (Baltimore) is also expected. The tour in London includes visits to the following hospitals: St. Thomas's, King's, Middlesex, Guy's, St. Bartholomew's, London Temperance, and the National Hospital for Epilepsy, Mr. Makins, Sir Watson Cheyne, Mr. Bland-Sutton, Mr. Arbuthnot Lane, Mr. Lockwood, Mr. H. Paterson, and Sir Victor Horsley doing the honours of the respective clinics. While in London the visitors will also inspect Frimley Sanatorium, the Museum of the Royal College of Surgeons of England, and the instrument manufactory of Messrs. Down Bros., and will find time to visit Oxford, to dine with the Council of the Royal College of Surgeons, to attend a reception at the American Ambassador's house, to visit the House of Commons and Lord's Cricket Ground, and to play golf. On Wednesday next they leave for Edinburgh, where they will visit the Royal Infirmary and the Hospital for Sick Children, under the auspices of Professor Alexis Thomson and Mr. Harold Stiles; whence they will proceed to Newcastle and Leeds, attending the clinics of Mr. Rutherford Morison and Mr. Moynihan; and so to Liverpool, where they will be under the care of Mr. Robert Jones. On Saturday, July 9th, they will sail again for America.

UNIVERSITY OF OXFORD: THE WELSH PRIZE.—The professor of human anatomy has awarded the Welsh prize for proficiency in anatomical drawing to Charles M. Burrell, scholar of University College.

EALING HOSPITAL.—The ceremony of laying the foundation-stone of the new hospital will take place at Mattock-lane, Ealing, on Wednesday next, July 6th, at 6 P.M. Princess Christian of Schleswig-Holstein, who had promised to perform the ceremony, will in consequence of the Royal mourning be unable to do so, but the committee has secured the services of Lord Rothschild for the purpose. It is stated that £5000 are still required to enable the new buildings to be opened in 18 months without any debt, and an urgent appeal for contributions is made.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON).—The council of this school has appointed Mr. Percy Flemming, M.D., F.R.C.S., to be lecturer in ophthalmology, and Mrs. E. M. Vaughan-Sawyer, M.D., B.S., to be lecturer in gynæcology. Entrance scholarships of the value of £60 for three years, extendible to five years, and £30 for one year, respectively, will be awarded on the result of an examination to be held from Sept. 20th to 22nd. Forms of entry and all particulars can be obtained from the secretary and warden.

DONATIONS AND BEQUESTS.—Under the will of the late Mrs. A. Grant of Ayr the Ayr County Hospital will benefit by a sum of £1505.—The late Miss E. E. Bond of Lancaster has left £10,000 upon trust for a sanatorium or other building for the relief and cure of consumption.—Mr. Edmund Davis has given a donation of £1000 to the Middlesex Hospital in response to Prince Francis of Teck's appeal on behalf of the funds of the institution.—The Royal Dental Hospital, Leicester-square, has received a legacy of £250, duty free, under the will of the late Miss Emma Brandreth.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The sixty-ninth annual meeting of this association will be held on Thursday and Friday, July 21st and 22nd, at the Royal College of Physicians, Edinburgh, under the presidency of Dr. John Macpherson, Commissioner in Lunacy for Scotland. A fairly large number of papers will be read. The annual dinner will take place on July 21st at the Caledonian Hotel at 7 P.M. The charge for dinner tickets (wines included) will be 1 guinea. The honorary general secretary is Dr. C. Hubert Bond, 11, Chandos-street, Cavendish-square, London, W.

RUSSIAN MILITARY ORTHOPÆDIC CLINIC.—Early in April the tenth anniversary of the Military Orthopædic Clinic was celebrated in Russia. During the proceedings Professor G. J. Turner stated that the development of orthopædics in Russia had been very backward. There were only two special orthopædic clinics in the country, at Kharkoff and Moscow, previously to the establishment of the Military Orthopædic Clinic in 1900. The hospital commenced with five beds, now ten more have been added, but the calls on its resources continue to grow. Patients come from all parts of Russia and wait their turn, and during its nine and a half years of activity 9774 have been treated, and over 2500 operations have been performed.

MAITLAND SANATORIUM, PEPPARD COMMON (OXON.).—The new buildings of this sanatorium, the medical superintendent of which is Dr. Esther Carling, were opened by the Bishop of Oxford on June 25th. The Hon. W. F. D. Smith presided and said that they had received £3469 for the alterations and additions, out of which they had spent £3080. This left a balance of £389, but as there were works in hand which would cost £900, £511 more were required to meet the debt, which he hoped would soon be found. The Bishop of Oxford said they would see the campaign against consumption in its true light if they thought of it as a real bit of patriotism, and it was the larger understanding of patriotism that they should foster more and more. He heartily recommended the reading of Mr. John Burns's speech at the Whitechapel Exhibition last year. Professor W. Osler spoke of the campaign as the most

hopeful in which they were engaged to-day, foreseeing that in the course of a few generations the disease would be wiped out. Mr. J. F. Mason, M.P., promised to double whatever sum was collected in aid of the funds.

LITERARY INTELLIGENCE.—Messrs. Cassell and Company, Limited, announce for immediate publication "Moveable Kidney: its Etiology, Pathology, Diagnosis, Symptoms, and Treatment," by William Billington, M.S. Lond., F.R.C.S.

MEDICAL FREEMASONRY.—On Monday, June 27th, a medical Rose Croix Chapter was duly consecrated by the M.P.S. Grand Commander, the Right Hon. the Earl of Dartrey, 33°, and Ill. Bro. George Frederick Rogers, M.D., 31°, was installed as first M.W.S. Ill. Bro. W. A. Oxford, M.D., 32°, to whose initiative the foundation of the Chapter is mainly due, is Recorder.

LEPROSY IN RUSSIA: EXPERTS' VIEWS ON ITS TREATMENT.—At the recent Pirogoff Congress a special sitting was devoted to reports on leprosy in Russia. Dr. J. J. Hubert estimated the number of patients in Russia at 1736, and insisted that the scourge should be dealt with by the Government. His figures were disputed by some of the delegates who computed the number of lepers as high as 10,000. A plea for isolation was objected to by those who insist on the liberty of the individual. Dr. R. K. Biller, director of the Riga leper station, in presenting his report, laid stress on the contagious nature of the disease, and *inter alia* added that isolation was the only method against its spread. He urged its application in the most complete and stringent possible form, both in acknowledged cases and for suspects. He advocated the separation of children from leprous parents and stated that he considered lepers should be a State charge. Dr. V. J. Andrusson also estimated the number of lepers in Russia at 10,000, and said that the law on leprosy should be reformed and that leper stations should be established near universities for the instruction of students. He added that he had found apparently successful cures spoiled by the drinking habits of the patients. Dr. N. A. Solotavin described the condition of things in the leper community of Yamburg, near St. Petersburg, where the disease has taken a firm hold. Finally, Dr. N. P. Proxoroff spoke of the striking success of the struggle with leprosy in Norway due to a radical temperance reform. With the decrease in the consumption of alcohol both crime and leprosy have diminished. He said that in Russia drink was at the root of the leprosy scourge. On the hearing of these reports the meeting passed a resolution to the effect that it was desirable to hold at an early date a conference of specialists; a resolution in favour of isolation was also passed. In considering cases in which medical men were reported to have inoculated themselves with leprosy in order to test its infectivity, the meeting held that such inoculations were wrong.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

A Medical Peer.

AMONGST the new peers included in the list of Birthday honours is Sir WALTER FOSTER. He is a medical man by profession, and during the many years in which he sat in the House of Commons he took a close interest in matters of public health. He retired from the House of Commons a few months ago.

The Midwives Bill.

The Midwives Bill, which has for some time been standing for second reading in the notice paper of the House of Lords, has been withdrawn by the Lord President of the Council. However, it will be reintroduced in an amended form. The object of this operation is to simplify the proceedings on the Bill. The Privy Council has received representations which have, it is understood, induced it to assent to a modification of the terms of the measure. It was open to the Government to bring forward the modifying amendments in committee, but that is a complicated process. As the Bill had not received a second reading it was the simpler course to withdraw it and press forward a redrafted measure. The Government intends, if possible, to pass the Bill through both Houses of Parliament this session.

Experiments on Living Animals.

The annual return showing the number of experiments on living animals during the year 1909 under licences granted under the Act 39 and 40 Vict., c. 77, has been printed as a Parliamentary paper. The nature of the experiments is distinguished in it. The total number of experiments which took place during the year was 86,277, being 2357 less than in 1908. Of these, 82,359 were inoculations, hypodermic injections, and some few other proceedings performed without anæsthetics. Professor G. D. THANE, who signs the report, states in it that in no instance has a certificate dispensing with the use of anæsthetics been allowed for an experiment involving a serious operation. The number of experiments performed under licence and under the various certificates are carefully recorded, and the conditions under which they were generally carried out are stated. In the event of pain ensuing as the result of an inoculation, a condition attached to the licence requires that the animal shall be killed under anæsthesia as soon as the main result of the experiment has been attained.

During the year 1909 (the report goes on to state) 45,182 experiments were performed at five institutions in the course of cancer investigations. A large number of experiments, almost wholly simple inoculations and similar proceedings, were performed either on behalf of official bodies, with a view to the preservation of the public health, or directly for the diagnosis and treatment of disease. Several county councils and municipal corporations have their own laboratories in which bacteriological investigations are carried on, including the necessary tests on living animals; and many others have arrangements by which similar observations are made on their behalf in the laboratories of universities, colleges, and other institutions. A sewage farm is registered as a place in which experiments on living animals may be performed in order that the character of the effluent may be tested by its effects on the health of fish. The Board of Agriculture and Fisheries has a laboratory which is registered for the performance of experiments having for their object the detection and study of the diseases of animals. In other places experiments have been performed on behalf of the Home Office, the Naval Medical Service, the War Office, the Army Medical Advisory Board, the Army Veterinary Service, the Local Government Board, the Metropolitan Asylums Board, the Royal Commission on Tuberculosis, the Advisory Committee for Plague in India, the Tropical Diseases Committee of the Royal Society, and the Grouse Disease Committee. 63 licensees return over 16,000 experiments which were performed for Government departments, county councils, municipal corporations, or other public health authorities; 1126 experiments were performed by three licensees for the Royal Commission on Tuberculosis; and 15 licensees performed 6386 experiments for the preparation and testing of antitoxic sera and vaccines, and for the testing and standardising of drugs.

During the year seven new places were registered for the performance of experiments and three places were removed from the register.

Sir THORNLEY STOKER makes the report for Ireland. He states that 21 licences were in force there during the year. The experiments performed were 284 in number. 78 of them were physiological, 37 therapeutical, and 169 pathological. The greater number consisted of hypodermic injections and inoculations. The principal were: investigations of the gases of blood and blood pressure; the movements of respiration, functions of heart and nervous control of heart; intestinal movements in connexion with respiration; uterine contraction; nervous and chemical control of digestive glands; the study of X rays; study of calf vaccine lymph; of medico-legal investigations; of the intravenous injection of drugs in disease; the study of the tubercle bacillus and of the pneumococcus; of the pathogenicity of lumbar puncture; of the actions of the kidney; of the action of adrenalin and of an antimeningococcus. The increase in the experiments of late years is largely connected with the study of new investigations connected with the treatment of disease by means of antitoxins, sera, and vaccines.

The Coroners' Law and Death Certification (Amendment) Bill.

The Bill which Sir WILLIAM COLLINS introduced in April in the House of Commons "to amend the law relating to coroners' law and the certification and registration of deaths and burials" has now been printed. It has the support of Colonel LOCKWOOD, Sir PHILIP MAGNUS, Sir LUKE WHITE, Dr. HILLIER, Dr. CHAPPLE, and Mr. O'GRADY. The promoters of the Bill explain in a brief general way its objects in a memorandum. They state that the law relating to coroners is not adapted to modern necessities, and its administration is costly to local authorities without securing efficiency in results. In December, 1908, a Departmental Committee of the Home Office was appointed to inquire into the law relating to coroners and coroners' inquests, and into the practice in coroners' courts. The provisions of this Bill are intended to give effect to many of the recommendations of the Departmental Committee of 1908 and of the Death Certification Committee of 1893. The report of the Departmental Committee drew attention to anomalies existing in the appointment of coroners in certain "franchise districts," in the qualifications required of coroners, the conditions of their appointment, the mode of their remuneration, the provision of deputies, the areas of jurisdiction, &c.

Clause 6 of the Bill lays down that appointments as coroners are to be given only to barristers and solicitors having certain professional experience, and to registered medical practitioners who are barristers or graduates in law of a university in the United Kingdom. By Clause 10, any county or borough council may appoint one or more medical investigators or pathologists in each coroner's district to assist the coroner in his inquiries and inquests and to make

post-mortem examinations. Such medical investigators or pathologists shall be paid such remuneration out of the county or borough rate as the county or borough council may determine. The further provision is added in Clause 11 that where a medical witness is not a medical investigator or pathologist appointed by the county or borough council he shall be entitled to receive such remuneration as the Secretary of State shall by regulation prescribe.

The proposals in Part II. of the Bill concern the registration and certification of death and burial. It is provided in Clause 16 that no death shall be registered under the Registration Acts without the delivery to the registrar of a certificate of death signed by a registered medical man or by a coroner after holding an inquiry or inquest. In a succeeding clause it is proposed that before giving a certificate of death a registered medical practitioner shall personally inspect the body and identify it as the body of the person named in the certificate whom he has attended during his last illness and shall certify to the fact of death as well as to its cause. The filing of the certificate is to take place within 24 hours of death. When the medical man is unable to give a certificate of death he must notify to the coroner the fact of the death with the reasons for his inability to give such certificate. A form of death certificate is set forth in one of the schedules to the Bill. Non-compliance with the provisions of the Bill is to render the medical man liable to a penalty. It is also proposed that certificates of burial should be entered in a register.

At this time of the session a private Member's Bill has little chance of advancement. It has to be regarded as the embodiment of the views of those who introduced it, and it may serve a very useful purpose in inducing consideration of the subject with which it deals.

Accidents in Mines.

A Bill has been presented in the House of Commons on behalf of the Government for the purpose of securing organisation for rescue and aid in the case of accidents in mines. It gives the Home Secretary power to require the supply and maintenance of appliances for use in rescue work, the formation and training of rescue brigades, the supply and maintenance of ambulance appliances, and the training of men in ambulance work.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 22ND.

Nerve Troubles amongst Telephone Employees.

Mr. WILLIAM THORNE asked the Postmaster-General whether his attention had been drawn to the increase of hysteria and other nervous disorders in the large telephone exchanges in London; whether, in the London Trunk Telephone Exchange alone, 25 girls were absent through nerve trouble between May 12th and 31st; and whether, in view of this prevalence of nervous complaints, he would order an inquiry to be made into the causes of this state of matters.—Mr. H. SAMUEL wrote in reply: A medical inquiry into the conditions of work in telephone exchanges has been proceeding for some time past and is now completed. The report of the investigators is receiving immediate and careful consideration. The number of absentees from the London Trunk Exchange on account of nerve trouble between the dates mentioned was not quite half the number quoted by the honourable Member among a staff of 239 persons.

THURSDAY, JUNE 23RD.

The Detention of Feeble-minded Females.

Mr. BARNSTON asked the President of the Local Government Board whether, in view of the continual difficulty which boards of guardians had in dealing with feeble-minded females, he could see his way to introduce legislation to empower boards of guardians to detain such persons.—Mr. BURNS replied: I am aware of the difficulty to which the honourable Member refers. The matter is, however, part of a much larger question, and I am not in a position at the present time to promise legislation dealing with this particular aspect of it.

The Butter and Margarine Act.

Mr. HUGH BARRIE asked the Parliamentary Secretary to the Board of Agriculture in how many cases of alleged fraud the department had initiated prosecutions under the Butter and Margarine Act, 1907, and with what result.—Sir E. STRACHEY answered: No prosecution under the Butter and Margarine Act, 1907, has as yet been initiated by the Board.

Nerve Troubles amongst Telephone Employees.

Mr. H. SAMUEL (the Postmaster-General), speaking on the Post Office vote, said that as chairman of the Departmental Committee on Industrial Diseases he was instrumental in having telegraphist's cramp scheduled as entitling sufferers to compensation under a recent statute; and now that he was himself at the Post Office he was eager to adopt any means that science could devise in order to provide what was far better than either compensation or cure for disease of that character, and that was prevention of its occurrence. With respect to the young operators in the telephone exchanges there had lately been sensational statements in the press as to the effect upon their physique of the employment on which they were engaged. Grossly exaggerated figures had been furnished, which on inquiry proved to require to be divided by two, three, or even by ten in order to give a fair picture of the facts. But the truth remained that the work of the telephone operator was of a character that did impose a certain strain upon the nervous organisation. The late Postmaster-General some months ago set on foot a medical inquiry into the conditions of employment in the telephone exchanges. The inquiry was conducted by the second medical officer of the Post Office and the principal female medical officer. The inquiry was now completed and the report of the committee reached him two days ago. The investigators visited a number of telephone exchanges and examined 250 of the operators, and in their report they made a number of suggestions for improvements in the allocation of hours and the intervals for meals and rest, and they expressed the hope that some improvements might be devised in the instruments in use. He had given instructions that the recommendations in this report should be regarded as matters of urgency, and he hoped in the near future to be able to effect any improvements that might be found by the medical officers and his technical advisers to be practicable in that branch of the work of the Post Office.

County Medical Officers of Health.

Mr. LLOYD MORGAN asked the President of the Local Government Board whether county councils had hitherto been unable to appoint a medical officer of health under the Housing, Town Planning, &c., Act, 1909; whether the reason was that such councils were unable to fix the salary of the medical officer until they were in a position to specify the duties of the office; and whether he would state when he proposed to issue the general order setting forth the duties of county medical officers under the said Act.—Mr. BURNS (in a written answer) replied: The power of a county council to appoint a medical officer of health is contained in Section 17 of the Local Government Act, 1888, and many county councils have already exercised the power. As regards the last part of the question, I may state that the general order prescribing duties is in an advanced state of preparation, and that I hope to issue it shortly.

MONDAY, JUNE 27TH.

Malta Fever.

Mr. CHANCELLOR asked the Under-Secretary of State for the Colonies to state the number of troops in Malta during the year 1905, the half-years ending June and December, 1906, and the years 1907, 1908, 1909, and 1910; the civil population of the island; the numbers, respectively, of civil and military and naval cases of Malta fever for the same periods, respectively; the date when the cleansing of the harbour was carried out; and the date when the garrison was removed from the St. Elmo to the new barracks.—Colonel SEELY replied: The figures asked for by my honourable friend, so far as they are available in the Colonial Office, are as follows:—

Number of troops in Malta (average strength, all ranks), 1905, 9587; 1906 (Jan. 1st–June 30th), 8101; 1906 (July 1st–Dec. 31st), 6979; 1907, 6525; 1908, 6819; and 1909, 7122.

Number of military cases of Malta fever; 1905, 643; 1906 (Jan. 1st–June 30th), 119; 1906 (July 1st–Dec. 31st), 42; 1907, 11; 1908, 5; 1909, 1; and 1910 (Jan. 1st–May 31st), none.

Total naval force: 1905, 14,360; 1906, 12,130; 1907, 10,530; 1908, 9780; and 1909, 9920.

Number of naval cases of Malta fever: 1905, 270; 1906, 514; 1907, 14; 1908, 6; and 1909, 11.

Number of civil cases of Malta fever: 1905–6, 822; 1906–7, 714; 1907–8, 501; and 1908–9, 463.

The figures for the exact periods named are not available in the Colonial Office as regards the number of cases among the civil population. The civil population of Malta was estimated at 190,250 on March 31st, 1909. I do not understand to what my honourable friend refers as the cleansing of the harbour. If he means the construction of drainage works to prevent sewage draining into the harbour, I can only say that various works with this object have been carried out from time to time during the last ten years. As regards the last sentence of the question, I would point out that there are still troops in occupation of the barracks at St. Elmo.

In reply to another question put by Mr. CHANCELLOR, Mr. MCKENNA (First Lord of the Admiralty) said that in the Navy at Malta, while there had been 11 cases of Malta fever in 1909, there had been 69 cases of simple continued fever.

Zymotic Diseases in the Isle of Wight.

Mr. DOUGLAS HALL asked the First Lord of the Admiralty whether he would explain why, in the official returns of zymotic diseases sent to Captain Christian, the head of the Royal Naval College at Osborne, the returns with regard to West Cowes were omitted; whether he was aware that in the official returns of East Cowes sent to Captain Christian measles, chicken-pox, whooping-cough, and German measles were not mentioned; had Captain Christian called the attention of the Admiralty to these omissions; and whether, in the interests of the general health of the college, he would take steps to ensure that outbreaks of all such diseases in the neighbourhood of the college should in future be reported to the head of the college.—Mr. MCKENNA replied: A communication on this subject has been received from the Isle of Wight rural district council and inquiries are now being made into the matter.

Asylum Death Notices.

Colonel RAWSON asked the Secretary of State for the Home Department whether he was prepared to take steps for the deletion of the description pauper patients from the notices of death sent out from the asylums, as such a description might be hurtful to the feelings of the relatives at a time of distress and bereavement.—Mr. CHURCHILL answered: I have communicated with the Commissioners in Lunacy, and I do not think there will be any serious difficulty in making the change desired. The alteration in the form of notice will require the approval of the Lord Chancellor, and I am asking the Commissioners to submit the matter for his approval.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DIGHTON, CHARLES A. ADAIR, M.B., Ch.B. Edin., has been appointed Ophthalmic and Aural Surgeon to the Scarborough Hospital and Dispensary.

LIVERMORE, WILLIAM BARCLAY, M.B. Aberd., has been appointed Medical Superintendent of the Devon and Cornwall Sanatorium, Didworthy, South Brent, Devon.

MARTIN, A. E., M.D. Cantab., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Elstree District of the county of Hertford.

MAYO, T. A., M.B. Cantab., F.R.C.S. Eng., has been appointed Medical Officer of Health of Cowes, and Certifying Surgeon under the Factory and Workshop Act for the Cowes District of the county of Hants.

MOIR, J. L., M.B., M.S. Vict., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Congleton District of the county of Cheshire.

PHILLIPS, LLEWELLYN POWELL, M.D., B.C. Cantab., F.R.C.P. Lond., F.R.C.S. Eng., has been appointed Professor of Medicine in the Egyptian Government School of Medicine and Senior Physician to the Kasr-el-Aini Hospital, Cairo.

WIGHAM, WILLIAM HARPER, M.D. Durh., M.R.C.S., has been appointed Medical Officer of Health for the South Molton (Devon) Urban District.

WINGRAVE, V. H. WYATT, M.D. Durh., has been appointed Resident Pathologist at the Medical Graduates' College and Polyclinic.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ARLESEY, NEAR HITCHIN, THREE COUNTIES ASYLUM.—Medical Superintendent. Salary £800 per annum, furnished residence, &c.

BATTERSEA POLYTECHNIC, London, S.W.—Lecturer in Physiology and Hygiene.

BIRMINGHAM, QUEEN'S HOSPITAL.—House Physician; also House Surgeon. Salary at rate of £50 per annum, with board, lodging, and washing.

BIRMINGHAM, YARDLEY-ROAD SANATORIUM FOR CONSUMPTIVES.—Resident Medical Officer. Salary £150 per annum, with board and residence.

BRADFORD, ROYAL EYE AND EAR HOSPITAL.—Resident Officer (female). Salary £30 per annum, with board and laundry.

BURY INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

CAMBRIDGE, CAMBRIDGESHIRE LUNATIC ASYLUM, Fulbourn.—Senior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

CANCER HOSPITAL, Fulham-road, London, S.W.—Senior and Junior House Surgeon for six months. Salaries £80 and £70 per annum respectively. Also Surgeon.

CARDIFF INFIRMARY (GENERAL HOSPITAL).—House Surgeon; also House Surgeon for Ophthalmic and Ear and Throat Departments, each for six months. Salary £30, with board, residence, and laundry.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.—Resident House Surgeon. Salary £50 per annum, with board and residence.

CHESTER COUNTY ASYLUM.—First Assistant Medical Officer. Salary £250 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £60 per annum, with board, apartments, and laundry.

CROYDON GENERAL HOSPITAL.—Junior House Surgeon. Salary £60 per annum, with board, laundry, and residence.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary £30, with board, residence, and washing.

DORCHESTER, DORSET COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

FRIMLEY, BROMPTON HOSPITAL SANATORIUM.—Assistant Resident Medical Officer. Salary £150 per annum, with board and residence.

GLASGOW SCHOOL BOARD.—Assistant Medical Officer (female). Salary £250 per annum.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with rooms, board, and washing.

HIGHBURY HILL HIGH SCHOOL FOR GIRLS.—Female Practitioner. Salary £50 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Radiographer. Salary 50 guineas per annum. Also Dental Surgeon. Salary 50 guineas per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Physician and House Surgeon, both unmarried, for six months. Salary in each case £30, with board, residence, and washing. Also House Physician and Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, &c.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Assistant House Surgeon (female). Salary £40 per annum, with board and laundry.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary at rate of £75 per annum, with board, residence, and washing.

MIDDLESEX COUNTY ASYLUM, near Tooting, S.W.—Fourth Assistant Medical Officer.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Clinical Assistants for six months.

NOTTINGHAM CITY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and laundry.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Also Assistant House Physician. Salary in each case £100 per annum, with board, lodging, and washing.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Pathologist. Salary £20 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary in each case at rate of £80 per annum, with board, residence, and washing.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.—Joint Morning House Anæsthetist. Salary £25 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN.—Junior Resident Medical Officer. Salary at rate of £40 per annum, with board and washing.

ST. MARYLEBONE, PARISH OF.—Visiting Medical Officer of the Workhouse and Houseless Poor Wards. Salary £200 per annum.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square.—House Surgeon for six months. Salary 50 guineas per annum.

SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and washing.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £250 per annum.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon and Assistant House Physician, unmarried. Salary £50 each per annum, with board, lodging, and washing. Also Casualty Officer. Salary £60 per annum.

SHEFFIELD ROYAL INFIRMARY.—Seventh Resident Medical Officer. Salary £60 per annum, with board and residence.

STAMFORD, RUTLAND, AND GENERAL INFIRMARY AND FEVER HOSPITAL.—House Surgeon, unmarried. Salary £130 per annum, with board, lodging, and washing.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, and residence.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging.

WAKEFIELD, WEST RIDING ASYLUM.—Assistant Medical Officer. Salary £140 per annum, with apartments, board, washing, &c.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £120 per annum, with apartments, board, and laundry.

WEST BROMWICH DISTRICT HOSPITAL.—Assistant Resident House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WEST HAM HOSPITAL, Stratford, E.—Junior House Surgeon. Salary at rate of £75 per annum, with board, residence, &c.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, rooms, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Hatherleigh, in the county of Devon.

Births, Marriages, and Deaths.

BIRTHS.

CRAN.—On June 23rd, at Netherdale, New Malden, the wife of Hugh Rose Cran, M.R.C.S., L.R.C.P., of a daughter.

KIDD.—On June 17th, at 13, Portland-road, Gravesend, the wife of Archibald Kidd, M.R.C.S., L.R.C.P., D.P.H., of a daughter.

LANGMORE.—On June 23rd, at Aston Tirrold, Berks, the wife of Herbert Richard Langmore, M.B. Cantab., M.R.C.S. Eng., of a son.

ROBERTSON.—On June 21st, at Althorpe, near Doncaster, the wife of J. F. Robertson, M.R.C.S., of a daughter.

SAMBON.—On June 24th, at Woodlawn, Shoot-up-Hill, N.W., the wife of Dr. Louis W. Sambon, of a daughter.

SHARP.—On June 23rd, at 1, Headingley-terrace, Leeds, the wife of Alexander D. Sharp, F.R.C.S.E., of a son.

MARRIAGES.

BRISCOE—PRINGLE.—On June 21st, at All Saints Church, Banstead, William Thomas Briscoe, M.R.C.S., L.R.C.P., to Nancy, younger daughter of Andrew Pringle, J.P.

DEATHS.

MUIRHEAD.—On June 22nd, at Charlotte-square, Edinburgh, suddenly, Claud Muirhead, M.D., F.R.C.P.E., in his 75th year.

STANWELL.—On June 26th, at Green-lanes, Palmer's Green, Middlesex, Frederic Skey Stanwell, M.D. Edin., aged 37 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A DIARY OF CONGRESSES.

CONGRESSES are now getting so numerous that we have thought that a diary like the one printed below might be of service to our readers. With that idea we shall repeat it occasionally, with any necessary additions or subtractions. The following Congresses, Conferences, and Exhibitions are announced for 1910 :—

July 2nd–5th (Edinburgh).—National Association for the Prevention of Tuberculosis.
,, 26th–29th (London).—British Medical Association.
,, 26th–29th (Cambridge).—Pharmaceutical Congress.
August 2nd–7th (Paris).—Third International Congress on School Hygiene.
,, 4th–10th (Brussels).—International Congress of Legal Medicine.
,, 31st (Sheffield).—British Association for the Advancement of Science.
Sept. 10th–14th (Brussels).—Second International Congress on Occupational Diseases.
,, 13th–15th (Brussels).—International Congress on Radiology and Electricity.
,, 22nd–27th (Toulouse).—Sixth French Congress of Gynæcology, Obstetrics, and Pædiatrics.
,, 27th–30th (Vienna).—Eighth International Physiological Congress.
Oct. 3rd–7th (London).—Sixth London Medical Exhibition.
,, 3rd–7th (Berlin).—International Congress on the Care of the Insane.
,, 16th–22nd (Barcelona).—First International Spanish Congress of Tuberculosis.

In 1911 :—
May–October (Dresden).—International Hygiene Exhibition.
August or September (Berlin).—Third International Laryngo-Rhinological Congress.
September (Brussels).—Exhibition of Fractures.
October (Cologne).—International Congress of Criminal Anthropology.

In 1912 :—
September (Washington, D.C.).—Fifteenth International Congress of Hygiene and Demography.

In 1913 the only fixture so far is in London, where the Seventeenth International Congress of Medicine will take place.

WEI-HAI-WEI: THE OPIUM HABIT AND PUBLIC HEALTH.

THE territory of Wei-hai-wei was leased to Great Britain by China by a convention made in 1898. It lies in latitude 37·30 N., longitude 122·10 E., in the Chinese province of Shantung, and comprises the island of Liu Kung, all the islands in the Bay of Wei-hai-wei, and a belt of land ten English miles wide along the entire coast line, with a total area of about 285 square miles and an estimated population of 150,000, in which are included 4000 residents on the island of Liu Kung. The government is administered by a Commissioner, Sir J. H. Stewart Lockhart, K.C.M.G., whose report for the year 1909 has just been received at the Colonial Office. It states, *inter alia*, that every endeavour has been made, so far as the territory is concerned, to carry out the policy of His Majesty's Government with regard to opium and to assist China in her task of suppressing the opium habit. The lease of the opium farm, which was vested in a farmer who paid the Government for his privilege £700 a year, having expired in June, 1909, an Ordinance was at once introduced prohibiting generally the importation, sale, and smoking of opium and any other hypnotic, and only allowing an exception on medical grounds in the case of a few licensed vendors who are permitted to import the drug and to retail it only to persons who produce a doctor's certificate that it is required for medicine. Since the introduction of the Ordinance only two chests of opium have been imported, and the number of shops licensed to sell opium, which to commence with was seven, has been reduced to one. The number of opium-smokers holding a medical certificate has been gradually reduced from 220 to 110. At the present moment there are no opium divans in the territory. A refuge for those who desire to rid themselves of the opium habit has been opened under the control of the medical officer. There were 31 admissions during the year. All those admitted were at once deprived of the drug, other hypnotics being given as required for the first few nights. Digestive and other symptoms were treated on general principles as they arose. The average stay in the refuge was 14 days, and all who had been admitted left in good health without any craving for opium. Whether there have been many relapses it is impossible to say. Public opinion among the Chinese of Wei-hai-Wei is now opposed to opium and the number of smokers is comparatively small. It seems, therefore, reasonable to hope that through the influence of public opinion, supported by the prohibitive legislation which has been introduced, opium smoking will become a rare habit in the territory. The general health of both the European and Chinese communities during the year was good. There were some cases of dysentery and an outbreak of diphtheria occurred among Chinese in a house on the island. There were five cases and two deaths before the disease was notified. The remaining three cases, which were severe, were treated with antitoxin, and all recovered. During the summer a severe epidemic of cholera broke out at Chefoo, distant 60 miles by road and 40 miles by sea from Wei-hai-wei, and the disease gradually spread along the high road from Chefoo to Wei-hai-wei until it reached several of the villages in the latter territory. Chefoo was at once declared an infected port, and all native passengers arriving by sea were subjected to medical inspection, whilst the villages infected were visited by a medical officer. Printed instructions regarding the treatment and prevention of cholera were also circulated throughout the territory by the headmen of the villages. As a result of the precautions taken the disease did not spread in the territory and soon disappeared. The sanitary condition of Port Edward and the island is satisfactory. The highest monthly barometrical average was that of January, 30·663; and the lowest that of July, 29·009. The highest temperature was 94° F., recorded in July, and the lowest 11°, in January and February. Rain or snow fell on 81 days, the total rainfall for the year being 33·54 inches. Peace and good order reigned throughout the year owing to the orderly nature of the inhabitants, among whom crime is rare and good behaviour prevalent.

A QUERY.

To the Editor of THE LANCET.

SIR,—Can any of your correspondents inform me which is the best electrically-lit ophthalmoscope or electric light fitting for the ordinary ophthalmoscope?

I am, Sir, yours faithfully,

June 27th, 1910. OPHTHALMOSCOPE.

SEWERAGE AND WATER-SUPPLY OF NICE.

Mr. A. McMillan, the British Consul, reports that the Nice sewerage system has been completed and is in a most satisfactory state and in full working order. All that remains to be done is to extend the main collecting sewer towards the west so as to remove still farther away the point of discharge into the sea; and a supplementary system of sewers will then be brought into operation in a not extensive suburban zone on the west side of Nice between the Magnan stream and the quarter known as Californie. Nice is in the enjoyment of arrangements for water-supply which are eminently satisfactory. There are two systems of conduits supplying water of two kinds: (1) water to be used for irrigation and road watering and the requirements of hygiene; and (2) drinking water. It has sometimes happened in the past that a lack of sufficient drinking water has necessitated its being supplemented by water of the former kind; but the municipality constructed and brought into operation about three years ago, in the Bon Voyage quarter, a factory for the sterilisation of drinking water. As this establishment, however, could only sterilise a portion of the drinking water required, a second factory was constructed in the course of 1909 in the Rimiez quarter, so that the whole supply of drinking water can now be sterilised. The result is that since December last the whole city of Nice has had an abundant and continuous supply of drinking water perfectly sterilised.

THE WEIR-MITCHELL SYSTEM.

To the Editor of THE LANCET.

SIR,—Could any of your readers tell me of an institution where the Weir-Mitchell treatment can be had for about 10*s.* or 15*s.* a week?

I am, Sir, yours faithfully,

JOHN E. H. PARSONS.

The Cottage, Shipton-under-Wychwood, Oxford, June 28th, 1910.

SALE OF LETTERS AND AUTOGRAPHS FROM WELL-KNOWN MEDICAL MEN.

AMONG a collection of autograph letters of celebrities sold at Sotheby's recently were included many interesting specimens from eminent medical men. Among them were letters of Dr. Neil Arnott, F.R.S., Sir William Gull, Sir Andrew Clark, Dr. Lionel S. Beale, Sir Richard Quain, Sir R. Owen, Dr. J. Conolly, besides many others. Only nominal sums were realised for the majority of the lots. One letter from James Currie, M.D., of Liverpool, the earliest biographer of Burns, to Sir Joseph Banks, respecting the treatment of French prisoners of war, declaring that they were insufficiently fed, clothed, and cared for, with a copy of Sir Joseph Banks's letter in answer, fetched £2 16*s.* Another from John Hunter to Edward Jenner, in which he says, "I want you to pursue the Expts. upon the Hedge Hog this winter, and if you would send me a colony of them I should be glad, as I have expended all excepting two; one an Eagle eat, and a trap caught the other," together with another to a Mr. Smith, an artist, asking him to accompany him to a camp of gypsies "which he should like to have a painting of," and two small portraits, sold for £5 5*s.* A lot of rather gruesome interest was two love letters from William Palmer, surgeon (the Rugeley poisoner), to his fiancée, Miss Annie Brooks, written shortly before their marriage, in which he expressed his warmest devotion "for ever and ever." Another lot included a

licence to William Pirrie, M.D., of Aberdeen, to practise anatomy in the anatomical theatre of Marischall College, signed by the Home Secretary, Lord Melbourne, with seal, and dated October 18th, 1832. The last lot, a collection of 19 letters from well-known physicians and surgeons, including a scarce portrait of Sir Thomas Watson, M.D., was sacrificed for 1s.

WEST BROMWICH PROVIDENT MATERNITY SOCIETY.

A SOCIETY has been started at West Bromwich for supplying any married woman, subject to the approval of a small lay committee, with medical assistance and expert nursing in cases of labour at reduced prices. It appears that the medical men and the nurses by whose charity the society is to live have not been consulted as to the rules of the organisation. It is extraordinary how often the situation repeats itself in which lay organisations propose to do public service by exploiting the medical profession.

TOOTHBRUSH DRILL.

To the Editor of THE LANCET.

SIR,—I should like to point out that I first instituted the toothbrush drill at the Newton Abbot Isolation Hospital especially for cases of diphtheria and scarlet fever: one brush for each child, and the brush to be kept in a glass of solution of hyd. perchlor. 1 in 2000. I believe the idea aided convalescence very materially—such details lead to success. Committees are not always agreeable to the cost of what they call luxuries.

I am, Sir, yours faithfully,

June 27th, 1910. EDWARD CARNALL, M.R.C.S., D.P.H.

THE DESTRUCTION OF FLIES.

Messrs. Edward Cook and Co., of the Soapworks, Bow, London, E., write:—"We notice in the press of this country and in the American press that a great deal of attention is being drawn to a circular issued by the City of Chicago Department of Health, and that various amended forms of it are being posted or advertised in this country. We tried both suggested remedies, and our practical experience has been that they are useless. From a chemical and bacteriological point of view this seems obvious.

"With regard to the first one—two teaspoonfuls of formaldehyde to a pint of water—we would point out that formaldehyde is most fugitive, and probably before 24 hours had elapsed there would be very little left in solution. Again, formalin has a very low comparative efficiency as a germicide, and we doubt in the strength quoted above if it would be a germicide at all.

"Next with regard to bichromate of potash dissolved in 2 ounces of water and sweetened with sugar. Bichromate of potash is a powerful oxidising agent, and in a few hours precipitates charred sugar or carbon, as we have found. We have also proved that it is not attractive to flies, and having oxidised the sugar it becomes ineffective.

"We have been experimenting in this matter for the last 15 years, and have this year discovered an efficient process. It is possible to sprinkle along the window ledges a strongly disinfectant powder. The composition of this powder has taken some time to arrive at, but we are now prepared to prove that it is absolutely efficient. A room infested with bluebottles and house-flies can be cleared in from half an hour to an hour. After sprinkling the window ledges, both the lower and the higher ones, all food being removed from the rooms, the doors and windows are shut. The flies naturally fly to the window-ledges and alight in the powder. The powder prevents their feet adhering to the glass and they fall again and again into it, thoroughly disinfecting themselves and very quickly killing themselves. If a window is left slightly open at the top many of the flies will fly away while still they have strength, for they cannot settle on the glass and they cannot continually fly round the room. This process is not only theoretically but scientifically and actually efficient, as we can prove to any inquirers.

"It seems a pity if publicity is given to means for the extermination of flies not to be sure that such means are thoroughly efficient."

W. A. H.—We know of no locality which entirely fulfils the conditions. The West is neither dry nor bracing, and the East coast is very exposed to cold winds. Probably a South-coast town would be the most suitable. This coast offers a graduated range of climate from the sheltered, warm, and humid resorts of the South-western counties to the cooler, drier, and more bracing stations of the South-east; while the entire coast has the maximum sunshine. In the eastern portions, the South Downs afford protection from the northerly winds, but the east wind is felt; further west, as the east wind comes down the Channel, it becomes considerably tempered by the warmth of the sea. Probably Seaford and Weymouth, despite their obvious differences, are the two places in England which most nearly fulfil the required conditions.

Spes is thanked for an interesting communication. The theory has been mooted before and has been supported by evidence in different directions in our columns and elsewhere. It has very generally been felt that it is "Not proven."

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—8 P.M., Dr. G. Mackay: Note on an Interfascicular Endothelioma of the Choroid, situated at the Optic Disc—Pathological Report by Mr. E. T. Collins.—Mr. J. B. Lawford: Further Note on the Case of Optic Atrophy and Oculo-motor Palsy due to Intracranial New Growth and shown on Feb. 10th, 1910. The Annual General Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. W. Evans: Clinique (Skin). 5.15 P.M., Lecture:—Dr. F. J. McCann: Gynæcological Therapeutics.

TUESDAY.—4 P.M., Dr. L. Guthrie: Clinique (Medical). 5.15 P.M., Lecture:—Dr. W. Ewart: The Principles of Treatment of Pulmonary Emphysema.

WEDNESDAY.—4 P.M., Mr. L. H. McGavin: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. T. H. Openshaw: Treatment of Appendicitis.

THURSDAY.—4 P.M., Dr. P. Stewart: Clinique (Medical). 5.15 P.M., Lecture—Dr. E. Cautley: Simple Infantile Anæmia.

FRIDAY.—4 P.M., Mr. W. Stuart-Low: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. R. Lloyd: Anæsthetics.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 11.30 A.M., Demonstrations in Minor Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. M. Moullin: Gynæcological Cases.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. G. Stewart: Syringomyelia (with cases).

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery. (Lecture V.)

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Elliot: Some Points in the Differential Diagnosis of Conditions accompanied by Insensibility.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. Howell Evans), 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations. Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. B. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Dr. A. H. Pirie).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. R. Carling: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

MONDAY.—5.15 P.M., Dr. H. Thursfield: Infant Feeding and Food Diseases, illustrated by cases, specimens, skiagrams, and drawings. (Lecture IV.). (Post-graduate Course.)

TUESDAY.—5 P.M., Mr. O. L. Addison: General Surgical Diseases, illustrated by cases, specimens, skiagrams, and sketches. (Lecture VII.). (Post-graduate Course).
WEDNESDAY.—5.15 P.M., Dr. H. Thursfield: Infant Feeding and Food Diseases, illustrated by cases, specimens, skiagrams, and drawings. (Lecture V.). (Post-Graduate Course.)
THURSDAY.—4 P.M., Lecture:—Dr. Still: Naso-pharyngeal Trouble in Children.—5 P.M., Mr. O. L. Addison: General Surgical Diseases, illustrated by cases, specimens, skiagrams, and sketches. (Lecture VIII.). (Post-graduate Course).

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.
TUESDAY.—3.45 P.M., Lecture:—Dr. Abercrombie: Clinical Cases.
FRIDAY.—3.45 P.M., Lecture:—Mr. W. Stuart-Low: Accessory Sinuses.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.
TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. T. G. Stewart: Disseminated Sclerosis.
FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Batten: Myopathy.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (6th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

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FRIDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (9th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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THE INDEX TO THE LANCET.

The Index and Title-page to Vol. I. of 1910, which was completed with the issue of June 25th, are given in this issue of THE LANCET.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 29th, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 23	29·84	S.W.	0·11	122	69	56	57	63	Cloudy
,, 24	29·67	S.	0·49	103	67	56	57	57	Raining
,, 25	29·46	S.W.	0·05	122	63	56	57	60	Cloudy
,, 26	29·52	N.W.	0·53	111	61	53	53	59	Cloudy
,, 27	29·69	W.	...	107	64	50	52	57	Cloudy
,, 28	29·57	S.W.	0·19	124	68	56	59	63	Cloudy
,, 29	29·67	W.	...	122	62	55	55	61	Cloudy

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